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INNERVATION AND TUMOUR GROWTH

A PRELIMINARY REPORT*

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IN searching the vast literature on tumours, only occasional and fleeting references concern nerves in relation to tumour growth. Even in the larger, comprehensive works this matter is dismissed with a few words. Accordingly, the nervous system appears as of little, if any, account in the development and life of tumours.

The problem falls under two heads. First, have tumours a nerve-supply of their own? Secondly, what is the relation of innervation to tumour growth? For even if tumours possess no nerve-supply, the original innervation of the tissues from which they arise may or may not have something to do with tumour development and growth.

I propose to deal here mainly with the first question, *i.e.*, have tumours a nerve-supply of their own? This has, until recently, been denied for all kinds and varieties of tumours. Indeed, it has been held that this was, a priori, to be excluded by virtue of the cell-independence and autonomy which constitute, in modern conceptions, the all-important basis of tumour growth. Thus, it is also held that tumours in their progress destroy the nerves of the tissues in which they grow.

Only few investigators have devoted more than cursory attention to this study in the past. One of the reasons has been the technical difficulties of the demonstration of nerves in tissues, more particularly in tumours. Older investigators

have generally reported negative results, and, like Goldmann (1911), found no tumour nerves. However, Foldau years ago traced nerves into moles (nævus pigmentosus), and Masson⁵ has more recently (1926) regarded these and certain growths of the appendix (1924) as distinctly nervous in character. When the artificial production of skin-cancers by tar-painting, discovered in 1915 by Yamagiwa and Itchikawa, gave a new impetus to experimental cancer investigation, the relation of nerves to these experimental tumours arose and was followed notably by Itchikawa and his co-workers,¹ and by Nakamoto (1924-1927).²

The first demonstrated, in tar-cancers, after laborious work, nerves which accompany the newly-formed blood and lymph vessels of the tumour, and even occur in the tumour stroma and parenchyma. These he interprets as newly formed tumour nerves. Nakamoto's findings He admits the are somewhat different. presence of nerves in the so-called benign. mature tumours, but is unable to demonstrate them in tar-cancers. To the contrary, he found tissue nerves disintegrated in the dermatitis which accompanies these cancers. He therefore comes to the conclusion that the malignant tumours are independent of the nervous system. This conclusion has again been contradicted by Itchikawa³ who subsequently found nerves in tar-cancer, and in a spontaneous cancer of the

In 1926 we began systematically to inves-

^{*} Presented to the Montreal Medico-Chirurgical Society at its meeting on December 16, 1927.

tigate the same problem in human tumours in this institute; at first without reliable successes and with frequent disappointments, so that, for a time, the work was discontinued. Stimulated again by the differences between Itchikawa and Nakamoto, our work was resumed, and this time with success. We have so far devoted our attention to the demonstration of nerves in malignant, cancerous and sarcomatous, human tumours. We have been able to demonstrate a nerve-supply in several types of cancers and sarcomata. In all of these, nerves have been found, not only in connection with the blood vessels or stroma, but intimately connected with the cellular parenchyma, even with the individual cells of the tumour. Moreover, all of these cases concern well-developed, surgically or post mortem removed, human tumours from different situations.

As our technique has improved, so also has improved the frequency with which nerves-in their abundant distribution and finer ramifications-have been demonstrated in tumours. The following modification of Bielschowsky's nerve-stain seems best suited. It does not differ essentially from others, except that the tissues are not stained in blocks, but in individual sections. Experiments have shown that pyridin is a very useful adjuvant for the demonstration of the finest, terminal fibrils, and that very thin, even, fresh sections give much finer results than paraffin embedding.

METHOD

1. A piece of fresh tissue, not exceeding 1 mm. in thickness, is fixed for at least 48 hours in 10 per cent formalin

2. Wash in distilled water for 15 minutes, and cut thin frozen sections, floating them on distilled water.

3. Place in pure pyridin for 3 hours to mordant at 37° C., and wash for one hour in distilled water to remove the odor of the pyridin.

4. Put in a darkly covered bottle of freshly made and filtered 2 per cent silver nitrate solution selected sections, and leave for 18 hours to impregnate at 37° C.

5. Wash rapidly in distilled water, and transfer for from 5 to 15 minutes to the following ammoniacal silver bath:

> To 5 c.c. of 10 per cent silver nitrate add 3 drops of fresh 40 per cent sodium hydroxide, in which a precipitate will form. Decant; wash the precipitate several times and add up to 20 c.c. distilled water. Redissolve the precipitate by adding ammonium hydroxide drop by drop, not exceeding 15 drops, and filter through a filter paper previously moistened with distilled water.

6. Wash sections rapidly in distilled water and place in 10 per cent formalin to reduce for 10 minutes, or until the white cloud disappears and the sections turn black.

7. It is essential to filter all solutions and baths, to

use glass needles, and to agitate sections constantly after Wash sections well, usually about 15 minutes, after formalin reduction, and differentiate in a 1 per cent solution of cyanide of potassium for from one to four minutes. (THIS IS A VERY IMPORTANT STEP!

8. Wash sections for two minutes in distilled water, and place in a 0.5 per cent solution of gold chloride, to which 3 drops of acetic acid have been added, for ten

minutes, or until the sections turn gray.

9. Wash in water for one minute; farther reduce in 5 per cent sodium-thiosulphate, wash well again in water, and counterstain with hæmatoxylin very lightly.

10. Dehydrate quickly in 95 per cent and absolute alcohol, clear in oil of bergamot, and mount from xylol with Canada balsam.

Each step has to be carefully watched and executed.

Nerve fibres are stained characteristically black; other fibres and reticulum, pale brown or darkly yellowish. Where nerve and other fibres are intimately associated, careful focussing will, in properly differentiated slides, permit the distinction between them. Sections from autopsied cases which are over twelve hours old give less reliable results.

That the fibres and fibrils thus discovered are nerves is based on the following considerations, in addition to their selective staining:

- 1. Distribution. These structures present themselves as a connected system of wavy or straight, even sharply bent (kinked) or turning fibrils which unfold (arborize) in a definitely graded order, from thicker to extremely delicate, fine ramifications, coursing through the tissues, and ending according to a manner which is characteristic of the distribution of nerves in tissues generally (plexuses). As a matter of fact, nerves are thus easily distinguished structurally from other fibres and, once recognized, can hardly be confounded with other tissue structures or components.
- 2. The method of branching, which often resembles that of a spreading bush or unfolding shrub, proceeds with rapid attenuation to the final, very delicate ramifications. Thus, an abundant arborization is produced which is, moreover, characterized by increasingly delicate tangles, which may resemble a loose ball or spool arrangement towards the terminal fibrils. Such threads form intraparenchymatous nerveplexuses. In one focus of microscopic sections fibrils often appear, therefore, as suddenly cut or interrupted threads, and considerable focussing is required to follow and connect them. This fact complicates the photographic repro-

duction, which is, therefore, never quite as complete as the picture of the section itself.

3. The characteristic manner of approach to, and the intimate relation of the terminal fibrils to the parenchymatous cells and nuclei, to which they extend with a spray-like unfolding and forking, and to which they appear occasionally attached. These terminal fibrils exhibit in places varicosities and bulbous ends, although they are generally free, and end as peri-cellular or intra-cellular arborizations. Professor Beattie, formerly of University College, London, now of the Anatomical Department of McGill, who kindly looked over some of these slides, tells me that these finer fibrils remind him of the embryonic nerve branches in the development of the stomach. I leave for the present undecided whether this has any particular significance in regard to growth of immature tumours. He has also drawn my attention to an article by C. J. Hill (Phil Trans. of the Roy. Soc., London, Series B., vol. eexv, pp. 335-387, 1927), which shows in some illustrations (notably 27 and 28) of terminal epithelial nerve ramifications between and around cells in a villus of small intestine of a new-born rabbit a resemblance to some of our own tumour preparation. In the latter it seems, however, that some nerve-fibrils extend directly into the cell (Fig. 6). Whether this is only apparently or actually true must be decided by future investigations.

4. Proper differentiation withdraws the black impregnation and stain from other structures, such as reticulum,* lymph and tissue spaces, and cell boundaries.† These are, moreover, easily distinguished from this complex neuro-system in a counterstain (hæmatoxylin, pierie acid, fuchsin) by their different courses and histological appearances. To one acquainted with nerve stains this distinction is immediately clear.

We are confronted by tumour nerves which in their irregularity and abundance reflect the growth of the tumour.

In this connection, it appears to me from

these studies, as well as from evidence so far collected from observations on normal tissues (collected incidentally), that our ideas of innervation of organs and tissues are at present wholly inadequate. The animal organism is really a tremendous bundle (plexus) of nerves, spreading from their centres, to which organs and cells hang and from which they are suspended! It is highly desirable that this problem, which has so far been shamefully neglected by all sides, should now receive a more careful consideration, both from the embryological, normal histological and physiological (functional), standpoints. Such investigations are now in progress in this institute.

I shall here only touch upon the second point: What may be the significance and bearing of the nervous system in tumours? Lenthal Cheatle, about twenty-five years ago (1903, 1908), pointed out the curious relation which certain squamous cell cancers and rodent ulcers of the skin have to the distribution of cutaneous nerves, more particularly the fifth cranial nerve, and that their occurrence is often incident at the so-called "maximum point" of Head, which Head assumed to be the point of greatest nerve radiation. Cheatle found this also to apply to a case of tar-cancer of the skin of the arm, in a man, in whom the whole forearm and hand had been exposed to tar, but the place of cancer development was on the maximum point of the first dorsal root. He further found, in a case of breast cancer, the posterior ganglion of the fifth dorsal spinal nerve to be degenerated.

These findings have recently experienced an experimental extension, principally through the work of Aschner, Engel and Cramer.⁴ These indicate the importance of innervation in the development and transplantation of artificial cancers in animals, and also that the absence of nerves does not only not predispose to, but rather tends to interfere with the prompt development and extension of experimental cancers. Engel has gone so far as to formulate a hypothesis on the influences of peripheral nerves on the growth of cancer cells (quoted by Itehikawa).

I do not wish, or is it possible, to enter here into a more profound discussion of these findings as they may affect the various phases of

^{*} Reticulum forms an intercommunicating, uniform, delicate meshy texture; nerves, a spreading system whose plexuses lie intraparenchymatous and terminate in fibrils.

[†] The exact point of differentiation is largely a matter of practice, especially as the demonstration of the finest, intraparenchymatous plexuses are concerned. Too little differentiation will blur their definition; too much is liable to fade them. Very thin, even, fresh, sections are also a requirement.

the problem of tumour growth. I should like to emphasize just two points:

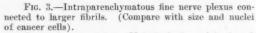
First.—It has been well established by previous observations that the tumour possesses its own blood supply, and that its vessels are derived from the arteries of its place of origin. Moreover, this vascular construction precedes the actual growth and the extensions of the tumour, primarily (as I pointed out in my

address before the Saskatchewan Medical Association in 1923) by "a local vascular awakening", and subsequently (as Goldmann and Borst emphasized years ago) by "a vascular restlessness" at points distant from the tumour.

Secondly.—To this, it would appear, must now be added the evidence that the actual tumour is an innervated tissue and stands, therefore,



Fig. 1.—Spreading nerve distribution in the interior of a cancer-nest. The section has disconnected some of the peripheral finer branches. Squamous-celled cancer of cervix uteri. x200.



Cancer of prostate: Metastasis in peloic lymph node. x1200.

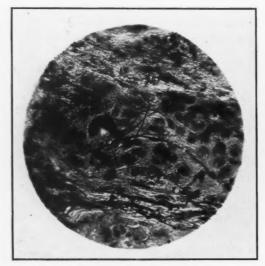


Fig. 2.—Intraparenchymatous nerve fibrils in a cancer-nest. (Their size and thickness can be gauged by comparison with the cancer nuclei).

Squamous-celled cancer of cervix. x550.

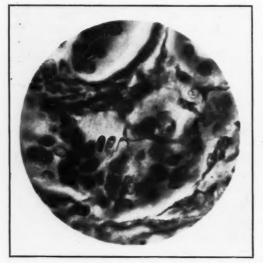


Fig. 4.--Peri-cellular terminal arborization (forking) within a cancer-nest.

Primary adenocarcinoma of lung: Metastasis in adrenal. x1200.

in some relation to the nervous system. (Trophic influences? Or are nerves simply a secondary accompaniment which follow the cancer cells?) Both of these findings put the tumour into a somewhat different light from present conceptions, for they indicate that the tumour problem extends beyond the tumour

entirely due; the former is responsible for the perfection and execution of the nerve stains, the latter for the almost equally difficult microphotographic reproductions.

The accompanying selected microphotographs were all made from fresh, frozen sections and are here reproduced, exactly as taken.

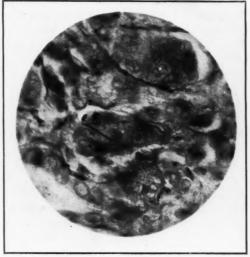


Fig. 5.-A bulbous termination of a nerve fibril in a cancer-nest. (Centre of field). Adenocarcinoma of rectum: Metastasis in the kidney. x1200.

cell to the whole functional and structural complexity of the tumour organization and growth. Indeed, the conception of "independence" and "autonomy" in tumour cells, if these observations are further substantiated, will have to be modified or interpreted accordingly.

I cannot close this short communication without paying a high tribute to Mr. John Partridge and Mr. Brian Thomlinson of the technical staff of the Pathological Institute, to whose untiring zeal and devotion this work is

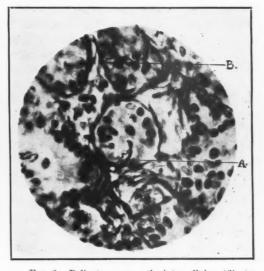


Fig. 6.—Delicate, apparently intracellular (4), terminations of fibrils at (A) and (B). Metastasis in the Adenocarcinoma of rectum: kidney. x1200.

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Ponudos or Pseudo-leprosy.—While on a visit from Guatemala, where he is stationed, Dr. Roblès has described to the Academy of Medicine a disease frequent enough in Guatemala, but which has never yet been classified. The lesions are chronic, resembling elephantiasis of the feet, the onset being insidious with successive remission and advance. The first sign is an erythematous patch accompanied by transient enlargement of the inguinal glands and high fever, followed by chronic ædema with thickening and pitting of the toe-nails and dorsal surface of the feet. The lesions only affect the soft parts, the skiagram showing the bones to remain unaffected. Dr. Roblès proposes the name of pseudo-leprosy for this affection, inasmuch as it has been frequently confused with true leprosy, although readily distinguished by the absence of lepra bacilli and of any alteration of sensation. On the other hand, it is distinguished from other kinds of elephantiasis by the absence from the blood and tissues of any recognizable parasites. -Paris Correspondent of Lancet.

ON THE TREATMENT OF GASTRIC ULCER

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WHEN dealing with a case of gastric ulcer, one of the most important, and very often one of the most difficult, matters to decide is whether medical or surgical treatment would be the better for the particular case under consideration. All the different methods of examination, clinical, roentgenological, and chemical, may point to the presence of an ulcer, and there may be no doubt whatever about the diagnosis, and, yet, we may have difficulty in deciding whether to advise a course of medical treatment, or to have immediate recourse to surgery.

Our decision will be influenced first of all by the condition of the patient, and also by the patient's past history, and very decidedly by his habits and social status. In other words, in treating gastric ulcer, we are only rarely called upon to meet an emergency, but much more frequently to devise some means to improve a disability. The degree of disability varies greatly with every patient, and it is important that the clinician properly estimate this. Here when our decision has been made, we should put fairly before the patient the advantages and disadvantages of both forms of treatment; how much faithful co-operation and self-denial will be required, if non-surgical means are used and what chance there will be of cure; while if some surgical interference is carried out what risk there may be of not surviving an operation, or of developing some painful and crippling complication.

It was with the idea of obtaining exact information on these questions that I first looked up some hospital records, and later gathered what knowledge I could, from the most recent literature I could find on this subject.

Of the gastric ulcer cases which had been admitted to the medical service of the Royal Victoria Hospital in the last 5 years, those cases were picked out which had showed by roentgen examination undoubted evidence of the presence of an ulcer, and which had been treated medically. On communicating with these we found that the majority of those, who had continued to

receive medical treatment only, reported that they were either cured or were better; while of three, who had subsequently been operated upon, two were cured and one had died. The results of medical treatment from these answers seemed to be very encouraging, and the surgical treatment brilliant, but with a high mortality. The numbers considered were, however, much too small to furnish any valuable statistics, but the very favourable results of medical treatment in these purposely selected severe cases were certainly very striking.

A great deal has been written in the medical journals about the proper treatment of gastric ulcer, and the literature on the whole is favourable to the medical treatment of uncomplicated cases, at least at first. The majority of those who report favourable results are physicians; the surgeons for the most part saying that medical treatment may be tried first, implying, possibly, that they have not much faith in any good resulting, and that there will be a speedy resort to surgery. The reported results of medical treatment certainly vary a great deal, but a high percentage of cures or improvement is the rule.

As regards the different forms of medical treatment used, they are much the same as have been used for many years: they consist almost always in giving small amounts of non-irritating food, with or without the addition of alkalies. The ways of administering these diets vary in different localities, but when to one or other form, we add the search for and removal of foci of infection, and such general measures as rest and good hygienic surroundings, we find these constitute about all that can be done by medical treatment.

These very simple and ordinary measures, when compared with the wonderful advances made in our means and methods of diagnosis of stomach conditions, and the brilliant and daring methods of modern surgical treatment, show very plainly that the medical treatment of gastric ulcer has not progressed in anything like the

same degree as the other branches have. The reason for this lack of a definite specific treatment is not far to seek. We do not know the cause of gastric ulcer, and therefore can only use general measures in its treatment. There are many theories as to the cause, but no actual knowledge; therefore, we can only treat symptoms.

The question arises whether by treating symptoms only we can offer patients with a peptic ulcer a fair chance of cure, and at the same time not expose them to unnecessary danger from accidents such as hæmorrhage or perforation? Or, is it better to advise surgical treatment with its often brilliant but somewhat uncertain results, plus a certain operative risk which is not negligible even in the best hands?

Gastric ulcer is not a very rare condition and we must be prepared to meet and treat it. From the literature, and from our own hospital cases, it must be acknowledged that there is a reasonable prospect of cure by medical means in certain cases. We must, therefore, be prepared to select our cases for medical treatment, and also be able to cull out at once those which should be treated surgically. In addition to these definitely classified cases there are others that are not so easily segregated, and these require careful study. They are the borderline cases, the chronic ulcers often without complications, which have been treated and have made headway, and have then relapsed. Should we treat them again medically, or advise more radical measures?

Let us consider some of the published results of medical treatment. From time to time, symposia on this subject have been held, and prominent men, both physicians and surgeons, have expressed their opinions and have discussed the matter from different points of view, in the hope of getting more light. Such a symposium was held in June, 1922, at the meeting of the American Medical Association, at which Bertram Sippy expressed the view that medical treatment should be directed to correct local malnutrition and to neutralize the destructive action of the gastric juice and that nature would do the rest, a large number of cures resulting.27 At the same meeting W. J. Mayo said he believed that careful medical treatment often brought about great improvement, and, if such treatment can be carefully carried out, that the improvement may be prolonged or permanent; but, he goes on to

say, there are few who can afford to make "a pet of an ulcer." Ninety per cent of his patients were wage earners, which fact influenced their social status, which in turn influenced their diet and home surroundings; and, he adds, under the most favourable conditions medical treatment often fails. These opinions typify the different points of view of the physician ond the surgeon.

Thomas Brown, of Baltimore, speaking at the same meeting, seems to me to epitomize best our knowledge of the situation as it now stands. He stated that he did not honestly think that chronic ulcer could be cured medically; the most favourable cases for medical treatment were the recent or more acute ulcers; all uncomplicated ulcers should be first treated medically, as he did not believe that it was dangerous for the patient to do so; and, as in all probability, a symptomatic cure could be effected, we ought to give the patient this chance. In conclusion however he said that he was of the opinion that, if there was no fear of surgical complications, all chronic ulcers should be operated upon.³

Alvarez stated that he had more faith in surgical than medical treatment; it was easy to cure ulcer medically, but the patients won't stay cured. Smithies, who had a very large experience, said, sarcastically, that among the patients coming to him for treatment were some who had been "cured" from one to fourteen times, many of them by Sippy himself.³⁰

The opinions of these men, three of them physicians, are then pretty strongly in favour of surgical treatment as the best form of treatment in at least certain types of cases. On the other hand, many well-known men claim large percentages of cures by medical means alone. Eggleston, in 1920, reporting the results of medical treatment in 500 cases of duodenal and gastric ulcer, observed over a period of six years, says, "One can be sanguine of complete cure." In uncomplicated cases, even of long standing, he secured "relief" in 70 per cent, and in the great majority of cases where symptoms returned the fault was due to dietetic Shattuck reported 28 cases carelessness. treated from six months to two years previously, 22 of whom had been free of symptoms since the beginning of treatment. Crohn, in 1925, reported on 20 cases treated medically,

some as much as ten years previously; 12 had been cured or improved, and 8 not improved.

In May, 1927, Franklin White reported the result of 42 cases of gastric ulcer treated medically and observed for three to five years in his private practice. During the same period 9 cases were studied, and referred at once for surgical treatment. Of the 42, which were treated by medical means only, 39 per cent were cured; 29 per cent improved, 2.5 per cent not improved; requiring operation later, 24.5 per cent; and died under treatment 5 per cent.³⁴

These last figures are a valuable group of statistics, as the cases were all carefully worked out and followed up, and the results carefully checked by repeated x-ray examinations and tests for occult blood in the stools. And, as White says, the results one or two years after treatment is begun are 10 to 15 per cent better than later on, as there are apt to be relapses and recurrences.

Another very interesting set of figures was published in April, 1927, when Forman reported the results of a follow-up of gastric ulcer cases which had been treated medically in Guy's Hospital between 1914 and 1922. Only those cases were considered in which, in addition to a typical history and clinical examination, an ulcer had been seen by x-ray examination, or at an operation in which the abdomen had been opened for some other reason. There were 79 such cases and 57 replied to the "follow-up" request. Of these, 42 per cent were cured or improved and 57 per cent were not improved or were worse. 13 A similar "follow-up" request in the surgical service of cases operated upon in Guy's during the same period gave cured or improved 58 per cent; the same or worse 40 per cent.13 These English figures agree very closely with the American figures of Franklin White, and were reported at almost the same time. As both are the result of close observation and the most careful checking over of findings in the followup eases by laboratory and x-ray examinations, they probably give us as accurate a record of results as it is possible to obtain, though the groups of patients examined are not so large as some reported by other observers who claim higher percentages of cured or improved.

It would seem, then, from these recently published figures, that when gastric ulcers are

treated medically we should get cure or improvement in about 40 per cent of the cases. Some observers report good results in as high as 75 or even 85 per cent. These results were obtained with all varieties of ulcers situated in different parts of the stomach, but were more or less selected cases. They included, for instance, cases with such complications as slight bleeding, or a good deal of callus thickening about the ulcer, or with small amounts of retention, or with varying degrees of penetration of the stomach wall, but did not include such cases as those with gross deformity, or deep penetration of organs, or with gross hæmorrhage.

Let us now consider some of the published results of surgical treatment, so that we may compare them with those just given. Thomas Brown says, because of the brilliant results in acute conditions, one is apt to plunge into surgery, but it should be a "dernier resort", and that there is far too little persistence in medical, dietetic, and physical therapy. Surgical treatment of the stomach has developed greatly during the last twenty-five years. Before that time treatment was chiefly medical, as post-operative mortality was very high. Ewald states that in 1908 Von Micqulicz' mortality in these cases was 25 per cent, whereas the mortality during medical treatment was about 6 per cent. In 1922, W. J. Mayo said that at their clinic they obtained satisfactory results in 90 per cent of duodenal ulcer cases, and in 80 per cent of gastric ulcer cases, and of the remaining 20 per cent a second operation brought the favourable results up over 90 per cent. Jejunal ulcers occurred in 1-2 per cent of cases and the post-operative mortality was 3.5 per cent. Gastro-enterostomy alone was satisfactory in 60 per cent of these cases; the best results were obtained when gastroenterostomy and excision of the ulcer by eautery was done; in this operation the mortality was under 2 per cent. Moynihan in his book says that in ten years before 1923 his mortality in cases of partial gastrectomy was 1.6 per cent. Bevan says that 90 per cent of duodenal ulcers and 50 per cent of gastric ulcers are cured by gastro-enterostomy and that the post- operative mortality is only 2 per cent; post-operative complication of jejunal ulcer occurs in 3 per cent. He believes that 10 per cent of chronic ulcers require surgery, and that gastro-enterostomy cures by relieving tension, and allowing alkaline bile to neutralize the acid juice. Smithies, in February, 1927, quoting the results of the Mayo Clinic, says in 2,300 duodenal ulcer cases operated upon, results were satisfactory in 95 per cent, and that in gastric ulcer cases the satisfactory results were 10 per cent less and the mortality twice that of duodenal ulcers. Gibson, following up cases of duodenal and gastric ulcer operated upon in the New York Hospital between 1912-1919, found a post-operative mortality of 8.5 per cent.16 Chamberlain, reporting from Moynihan's Clinic in October, 1927, say the postoperative mortality in partial resection cases was about 3 per cent. Walton reports a mortality after the same operation of 4.8 per cent, and the American results are somewhat higher. Reports of the mortality after gastroenterostomy vary from 1 to 3 per cent. Jejunal ulcers develop in about 3 per cent of cases.

These figures are the results of surgical treatment in the very best hands in Europe and America, and are certainly much above the general average, and although they are much better than the figures of 20 years ago as published from Von Micqulicz' Clinic, they show us that surgical treatment cannot even to-day be regarded lightly. Comparing the results quoted for both medical and surgical treatment we note as follows: By medical means alone 40 per cent or more get better or are much improved, and the mortality during treatment was stated some years ago to be 6 per cent but quite recently lowered to 5 per cent.34 Surgical treatment claims a much higher percentage of satisfactory results; recent careful statistics give 58 per cent (Guy's Hospital) and others as high as 80 or even 85 per cent. There is a post-operative mortality varying from 1-8 per cent16 according to the kind of operation performed, and jejunal ulcers develop in about 3 per cent of cases, which require further surgical, or prolonged and unsatisfactory medical treatment.

Now that we have the results of medical and surgical treatment in figures, let us arrange into groups the different types of ulcer cases and decide which form of treatment is the better for each group. All ulcers are either acute or chronic. The physician sees both

kinds; the surgeon only the chronic ones. When this is remembered, much becomes clearer. The physician's group contains all the earlier and milder cases that have not yet developed any of the characteristic complications, and the cases difficult to distinguish from the dyspepsias, or from disease in the abdomen outside the stomach. These acute or early cases are undoubtedly the most favourable for medical treatment, and make up a large part of the total number of cures by this means. At this stage surgical treatment is never considered, and later is only thought of when in a certain percentage the symptoms progress to the chronic stage, or when some complication arises. These early cases are the ones Oschner refers to, when he says he believes four cases get better by medical means to one that requires surgery.

The surgeon's patients consist entirely of individuals with chronic ulcers, which have progressed to the chronic state in spite of medical treatment, and of cases which have developed any of the many serious complications incompatible with a life of usefulness or comfort. This type of case is the one seen most often in consultation, and in hospital practice, and is a second and late stage of the disease, where there is some complication such as pyloric obstruction, repeated severe hæmorrhage or perforation into the surrounding organs with fixation and deformity cases in which there is no doubt that in these cases surgical treatment is required.

A third group is made up of cases which are more difficult to prescribe for. They are not the acute cases that respond to medical treatment, or the chronic cases with complications that demand surgery, but the cases which have not been treated, or which under medical treatment have not done well and have progressed to the chronic state. This group includes cases with histories of frequent recurrence of symptoms, often with repeated hæmorrhages, and which under the x-ray often show deep penetration of the ulcer into the stomach wall, or a great deal of callous thickening about the ulcer. They may not have been properly treated, or they may not have followed out their instructions faithfully, but in any case, they have progressed from the acute to the chronic state, and must be dealt with somehow. This type is the one about which we have so many different opinions as to which is the better form of treatment. If we believe that a very large percentage of gastric ulcers become malignant, then we must advise operation and removal of the ulcer, even if the mortality is 6 per cent or more for this type of operation. If we do not consider the danger to be great, the patient should be allowed the choice of medical or surgical treatment. The liability we will discuss later.

Now what can medical treatment offer a patient with chronic ulcer? It can give almost immediate relief of symptoms, if it is wellplanned and rigorously carried out, and it can offer the patient a 40 per cent, or better, chance of being more or less permanently cured or improved; that is, the symptoms will be relieved, but that the ulcer will heal is very doubtful. Mr. Soutar says, "It has long been held that chronic ulcer of the stomach and duodenum yields to medical treatment and we get complete cure. Surgical explorations have shown that this view cannot now be held." Although it affords relief from many of the symptoms, there are certain drawbacks to medical treatment. During the course of treatment there is a possible mortality of from 5 to 6 per cent84; there is a 31.5 per cent liability to some complication, which may require surgical intervention; perforation occurs in 5.2 per cent of cases⁸; there is also an uncertain liability of the ulcer becoming malignant. Moreover, the patient has to face the fact that he must always lead a life of moderation, especially in respect to food, alcohol, and tobacco. There is also a more than an 84 per cent³⁰ chance of the symptoms recurring. To emphasize this frequency of recurrence, Moynihan is quoted (Einhorn) as saying that he would like to see a series of cases which a physician, surgeon, and radiographer had agreed were ulcer cases, and which had been treated medically and had not recurred. "At present," he says, "I do not know of any such evidence I can accept." If the patient elects to be operated upon he has a 58-80 per cent18 chance of cure or improvement, with a post-operative mortality risk of 8 per cent or less according to the operation, and 1-3 per cent liability to the complication of jejunal ulcer, if a gastro-enterostomy is done.

If resection is done the danger of malignancy is removed, but if there has been hæmorrhage it will recur after operation, in 8 per cent of the cases. Arthur Hunter, the actuary, has estimated the death rate of these persons six years after operation as three times that of the general population of the same age and sex.⁶ The patient also must always be careful about his eating and drinking. Indeed, Deaver says the proper time for medical treatment is not before but after operation.

Incorrect diagnoses account for a great many cases of unsuccessful treatment. The reason for this inaccuracy is that the stomach is affected reflexly by a great variety of conditions, such as foci of disease outside the stomach, or disorder in function of another digestive organ. The typical x-ray findings of ulcer are so often absent, or atypical, especially in the early cases, that it is often only possible to make a proper diagnosis by long and careful observation. Smithies says that barely 9 per cent of patients under 31 years with the hyperacidity syndrome have gastric or duodenal ulcer and that in these patients this syndrome is usually caused by disease of the appendix or biliary tract. On the other hand, many ulcers, as later histories prove, are treated for appendicitis or biliary tract disease. writer (Harris) states that 50 per cent of the ulcer cases coming to him have had their appendices removed through a small incision; and another (Blackford4), that of 1,000 patients treated by him for gastric complaints 130 had had their appendices removed and onehalf of these were not benefited. patient does not respond promptly to treatment for ulcer it is very strong evidence that the diagnosis is not correct, and that the symptoms are due to some other focus of disease.3

The subacute or early ulcer cases when once separated from the pseudo-ulcers are, as we have noted, the most favourable cases for medical treatment, but the pseudo-ulcer cases also require careful and accurate segregation. The proper treatment for such foci of disease as appendicitis or biliary tract disease is, of course, surgical, but cases of dyspepsia or disordered function should under no circumstances be treated surgically; such treatment is always the result of careless or incomplete diagnosis, and always leads to disaster. W. J. Mayo says,

"The most frequent cause of surgical failure is when no ulcer is present," and, again, "The sins of the internist are of omission, those of the surgeon of commission."

To properly diagnose these cases of early ulcer is often a task of great difficulty. Faber says "the symptoms of ulcer are those of a painful dyspepsia, characterized by a long history and periodicity."15 In the subacute cases the symptoms last only a short time, and the periods of remission are long. Bolton has emphasized certain characteristics of the pain of ulcer. He says: (1) the pain is in the epigastrium; (2) it is accompanied by tenderness and rigidity; (3) it is severe and recurs in more or less prolonged attacks; (4) it is in constant relation to the taking of food; (5) it is relieved by vomiting; (6) its characteristics are constant in the same individual. These characteristics are pretty constantly present and, if carefully inquired into and looked for, will often help us to arrive at a correct diagnosis.

Difficulty in diagnosis may be responsible for a great deal of the improper treatment of ulcer, especially in the early cases, but what stunts our treatment most and makes the medical part of it, at least, a thing not of to-day but the relic of an earlier and less scientific age, is the fact that we know nothing whatever about the cause of ulcer, and so cannot prevent its formation. All we can do when it has once formed is to treat the symptoms.

There are various theories as to the cause, the main ones are the inflammatory, the circulatory and the bacterial. The inflammatory theory is that ulcer sometimes occurs as part of a more widespread inflammatory condition, as in gastritis where there is an intense reaction, or in miliary tuberculosis where there is breaking down of the tubercles, or in syphilis. Both McNee and Warthin have actually isolated the spirochæta pallida from an ulcer. The circulatory theory, of which Virchow was the great exponent and I think originator, was that, due to some disturbance in the arterioles, from blockage by emboli or changes in the vesselwalls, the isolated area was digested and an ulcer formed. The bacterial theory is chiefly upheld by Rosenow and his followers, who state that by intravenous injection of a streptococcus isolated from the tonsils or teeth of ulcer patients, or from the ulcer itself, they were

able to produce gastric ulcers in rabbits and dogs. Rosenow's work25-26 has only been confirmed in part, and is not generally accepted. Lately, Ivy and Shapiro17 reported the production of ulcer in dogs by the injection of specific proteins, the ulcer being formed by a local anaphylactic reaction. Their theory of the formation of ulcer is that if a person is sensitive to a certain protein, and an abrasion occurs from this protein during digestion, an ulcer will result. It has been suggested that, in addition to the local injury, there is an underlying constitutional factor,33 as these persons have been found to respond excessively to electrical, mechanical, and thermal stimuli; this condition persisted even after operation, and was probably a constitutional state. In contradistinction, however, to tetany, the normal amount of calcium is found in the blood. Moynihan thinks that gastric and duodenal ulcers are always secondary, and says, "As far as my clinical observation goes, they would appear to be secondary to infection elsewhere, generally within the abdomen, but possibly apart from it in the mouth, skin and elsewhere." From this theory, that ulcer is secondary to some focus of infection elsewhere, which is widely held, and because we have so very little evidence clinically of it being due to direct injury to the stomach,-we know how difficult it is to create an ulcer experimentally -it would seem likely that an ulcer is the local manifestation of some underlying constitutional condition. Of what the constitutional condition is we have no knowledge, and until we find out something about this our treatment of ulcer can never be exact and specific.

One more question requires our consideration, as it must largely affect our ideas about the treatment of ulcer, and that is, what proportion of gastric ulcers become malignant? Since 1909 the pathologists MacCarthy and Wilson, of the Mayo Clinic, have stated in numerous papers that a high percentage of chronic ulcers become malignant. They report that the examination of a large number of specimens of carcinoma of the stomach shows evidence of previous ulceration in 71 per cent and that 68 per cent of ulcer cases show evidence of carcinoma in the borders of the ulcer.²⁴ W. J. Mayo, in 1919, writing on cancer of the stomach says "in 40 per cent there is

a history of ulcer," and Moynihan in his book says, "I lean to the belief that many cases of carcinoma of the stomach have their origin in chronic ulcer," and he is quoted as giving this figure as 66 per cent.14 A few years after these figures were published, the Manchester Pathological Society asked Dibble and Morley, two pathologists, to investigate the matter. They examined 126 specimens of ulcer and found no malignant changes in any of them. They also examined 33 specimens of carcinoma of the stomach and found evidences of previous ulceration in 2 only (6 per cent). Of 201 gastric ulcer cases observed at the Peter Bent Brigham Hospital, malignancy developed in 4.5 per cent³⁴; and of 216 cases at the Moynihan Clinic, in 9.5 per cent.* An examination of the records of 315 cases of carcinoma of the stomach in the Johns Hopkins Hospital, reported in 1925, showed that the incidence of pre-existing ulcer was not more than 20 per cent, and probably not more than 16 per cent.14 In 1923, a questionnaire was sent out by Clement Jones of Pittsburg on this subject, and he reported "that reliable statistics do not support the contention that carcinoma of the stomach is more frequent in patients who have benign ulcer than in those who have not."18

Many pathologists do not accept as malignant the changes in the tissues on which MacCarthy and the Mayos base their figures. Ewing, the pathologist of Cornell, says. "The Mayos call carcinoma what is an inflammatory hyperplasia and misplacement of gastric glands." Wright, pathologist of the Massachusetts General Hospital, says, "Cancer developing on gastric ulcer is very rare," while Mallory, pathologist of the Boston City Hospital, says, "Ulcer with cancer nests in the border I have never seen." Crile thinks that less than 5 per cent become malignant, and Aschoff thinks it rare.34

Most writers regard the Mayo figures as much too high, and many do not accept their sections as evidences of malignancy. In regard to this the following fact is of interest. In 1909, W. J. Mayo showed some sections at the annual meeting of the American Association of Physicians. The sections were from five cases of ulcer, and were pronounced benign by the members of the association, yet in five years'

time three of these cases had died of carcinoma of the stomach.

It would seem then that all writers agree that cancer does develop on ulcer but that the older figures, and the Mayo figures are much too high, and that the correct percentage is probably less than 10 per cent.

From the more recent writings of men prominent in both medicine and surgery throughout America and Europe, and from the published results of treatment obtained from the follow-up of cases and the examination of hospital records, we can gather certain facts to guide us in deciding how to treat gastric ulcer. Some cases can be easily arranged for. The early ones require medical, those with severe complications, surgical treatment. For the remainder, either method may be used, and the choice is often determined by factors other than those of the actual disease condition, such as social or financial considerations. medical means are employed we may at least obtain relief of symptoms; if the chronic stage is reached healing of the ulcer probably never takes place. If there is surgical interference, brilliant results follow in a large percentage, but although the post-operative mortality is only one-quarter what it was twenty-five years ago, it is still higher than that of typhoid fever, and must be considered seriously. The greatest accuracy in diagnosis is also necessary for placing in their proper catagory the cases which closely simulate ulcer, and which have so frequently brought discredit on both forms of ulcer treatment. Furthermore, we cannot expect to improve very much on our present methods of treatment until we have a more exact knowledge of the cause of the disease.

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THE LIVER AS THE ORGAN OF SANGUIFICATION*

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Y/HEN Galen came into the medical world he found the liver vested with various mysterious functions. It had already attained such physiological significance that bile and black bile constituted two of the four fundamental humours, and many of the earlier philosophers had freely speculated upon its uses. Democritus (300 B.C.) indeed attempted to discover the 'source of the black bile by dissection. Burton1 refers to Democritus as Omnifariam doctus and describes him as follows :-

> "Old Democritus under a tree, Sits on a stone with book on knee; About him hang there many features, Of cats, dogs and such like creatures, Of which he makes anatomy, The seat of the black choler to see Over his head appears the sky, And Saturn, Lord of Melancholy."

Galen² exalted the liver still more by attributing to it the single great function of "sanguification." It formed for him the centre of his wonderful system of physiology. He saw the liver interposed between the gastro-intestinal tract and the heart and intimately connected with each; he saw the vena porta "like the trunk of a tree" sending its roots to the whole gastrointestinal system; he saw the intimate and easy communication of the liver with the right auricle. With the eye of discrimination he discerned these essential facts, and, with the mind

of a genius, he made the inference that the liver was interposed between the gastro-intestinal and cardio-vascular system in order to transform chyle into blood.

Galen's theory was accepted unchallenged until Bartholin3 published his work upon the lymphatics. His last chapter bears the title Post invento vasa lymphatica hepatis exsiguiæ and, "in a vein of learned gaiety he wrote an epitaph for the liver";4 regarded it as having been reduced from the position of "maximus heroibus" to that of a large dull bile producer. Bartholin placed the liver in this comparatively insignificant position, because he thought that all of the digested aliment found its way into the circulation by way of the lacteals. This new conception of liver-function eclipsed Galen's sanguification theory completely, but not permanently. It is interesting to note in passing that Harvey⁵ could not bring himself to relinquish Galen's theory, though he admitted the existence of the lacteals. He still considered the liver to be the chief organ of sanguification, mainly because of the obvious fact that much blood flowed continuously from the gastro-intestinal tract to the liver.

Modern investigation on liver-function has at every step confirmed Galen's theory. It has been shown that much the larger proportion of the aliment after being acted upon by the gastro-intestinal tract is picked up by the vena porta and transmitted to the liver where it is

^{*} Read before the Winnipeg Medical Society, Oct. 28, 1927.

altered and made suitable for general circulation. It is in truth sanguified. Some of the important sanguification processes, brought to light by modern research work are: maintainence of the blood-sugar level; changing ammonia into urea; detoxicating certain materials formed in the gastro-intestinal tract; destruction of certain bacteria absorbed from the gastro-intestinal tract; absorption and storing of certain fats from the blood; and controlling or profoundly influencing iron-metabolism. To these well known liver activities another has recently been added, which still more restores the liver to its ancient role. The discovery that the ingestion of liver practically invariably produces a remission in Addison's anæmia is, from a practical point of view, the most important observation yet made upon liver activity, and it is with this new fact that this address is particularly con-

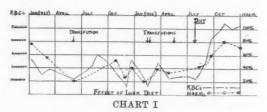
Whipple and his associates, in 1920, aroused interest in the effect of liver on blood-formation by demonstrating that dogs, after exsanguination, regenerated blood more rapidly if liver were contained in the diet. Gibson and Howard, in 1923, demonstrated that a diet containing liver daily had a beneficial effect on cases of pernicious anæmia. Since that time observation has shown that the effect upon pernicious anæmia is so constant that it is even of diagnostic value.

The original diet prescribed by Gibson and Howard carried from 1500 to 1900 calories, and was selected for its high iron-content; it contained liver daily and plenty of fruit and green vegetables; it was low in fat and high in vitamines. Minot and Murphy8 used a similar diet, but with a higher caloric value (2000 to 3000), and insisted upon 120 to 240 gm. of liver or kidney daily. Koessler9 has used a similar diet but has laid particular emphasis upon vitamine content, because he sees in vitamine starvation one link in the chain of events that produces pernicious anæmia. Richards and Daines10 also used this diet, but with a high fat-content, upon the assumption that B. welchii might play a part in the pathogenesis. The significant fact in connection with these various diets is that they all induce remissions, and from the results each group of observers have found confirmation of their theories. The common factor, however, is

liver, and it is gradually being realized that liver and liver alone is the potent element. The other elements may be varied through a wide range without interfering with the effect of the liver, so long as a sufficient caloric value and a proper balance are assured.

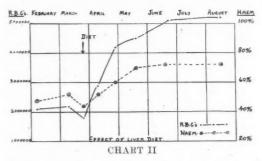
The suspicion that the effects of liver might be fortuitous has been completely allayed by the discovery that no case of true uncomplicated pernicious anæmia fails to respond. This fact is attested by several hundred cases in the literature, and by the experience of many physicians. The fear that the remissions might be as fugitive as those produced by transfusion or splenectomy has been dispelled by the fact that of all the cases on record very few have relapsed while taking liver. Many of these have now been observed for as long as three years. We have personal knowledge of a case who was placed on liver-diet by C. P. Howard four years ago. She has never looked back.

Charts showing the response in two typical cases are reproduced. These are representative of twelve cases that have been followed. The first chart represents two years in the history



of a patient with severe pernicious anæmia. The graphs show the fluctuations in hamoglobin percentage and the red blood cell count. They give the usual picture of tribulations and transfusions which were formerly the lot of all such patients. Three remissions are seen in response to transfusions. The last transfusion produced no change, and for three months following it the patient's condition was deplorable and apparently hopeless. She had marked pallor, general œdema, dizziness on any change of posture, spastic paresis of her legs, gangrene of one finger and almost complete indifference to her surroundings. At this juncture (August, 1926). the patient was put on a liver-diet, though it was felt that she might not be able to take it and that she might not respond. imagine our surprise and gratification when she was at once precipitated into a remission, which in the course of a single month produced in her a normal blood count and a corresponding remission in all her symptoms. She has maintained her gain during the intervening eighteen months, and to-day is normal in all respects, except for the postero-lateral sclerosis, the symptoms arising from which have also improved.

The second chart represents the course of a

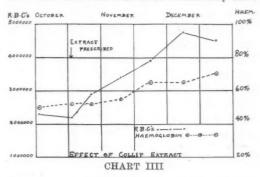


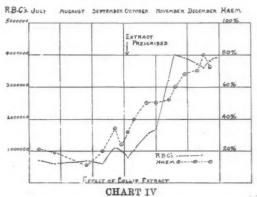
similar though less severe case. The effect of one transfusion is seen. The much more sudden, complete, and prolonged remission induced by liver diet is also seen. This patient never distinued his work, though he was on the ragged edge when commencing treatment last March. He had marked dizziness and dyspnæa on exertion, and some ædema of his feet at the end of the day. All the symptoms cleared up on treatment, and the spleen receded from a position two inches below the costal margin to one in which it could not be palpated.

Minot and Murphy⁸ have very thoroughly worked out the response to their diet in a series of ninety cases. The average rate of regeneration is seen to be about 300,000 red blood cells per week during the first two months. By that time a blood-count close to normal is usually attained.

Though liver is usually very well taken, even by those who have an inherent distaste for offal, there are certain obvious objections to it. The prospect of having to consume from one quarter to one-half a pound of liver daily for the remainder of life is not a pleasant outlook for most people. Also, the difficulty in the elimination of protein and purin bodies might ultimately produce complications. For these reasons, as well as for those that are purely scientific, the question as to what particular part of the liver is the active principle has aroused much

interest. Already several extracts are being used and some are on the market. We have had the privilege of using an extract prepared by Collip* of the University of Alberta upon two uncomplicated cases of pernicious anæmia. No other form of treatment was used. The results were most gratifying, and, with Professor Collip's permission, are indicated in Charts III and IV. It is admitted that these results may have





been fortuitous, and that many more cases must be studied before conclusions can be reached.

The rationale of the treatment is still obscure. Various chemical constituents of liver have from time to time been given credit for the specific effect. Among these are, the iron, the protein, and the fat-soluble vitamines (A. D. and E.). Since none of these, given in other vehicles, have in the past produced such dramatic effects upon the course of these anæmias it would seem improbable that they are the active agents. Furthermore, Minot and Murphy state that by the use of a protein-free, fat-free, and almost iron-free liver-fraction, produced by Cohn, they have got results comparable to those produced by

^{*} A modification of the Cohn extract.

whole liver. If the further use of the various extracts confirms this opinion some other reason for the specific action must be sought. The liver has in this instance behaved in its usual enigmatic manner. It was originally prescribed because of certain known chemical constituents and to the delight of every one it worked; now it seems possible that although it worked it did so through some subtle property of its own, and not because of any known chemical constituent.

Even though future experience will show this form of treatment to be no more useful than it has already proved itself to be, it must be regarded as the most unexpected and the most useful contribution to the treatment of chronic disease of this age. In spite of the recent very valuable additions to our knowledge of chronic diseases their treatment still presents a picture essentially barren and hopeless, and nothing in the life of the physician is so depressing as the constant feeling of helplessness in their presence. For him who treats chronic diseases there are few miraculous cures and no dramatic scenes. He rarely experiences the pride that an obstetrician must feel, when, after he has assisted at a normal physiological function, he receives the tearful thanks of the happy father; he does not know the exaltation of the surgeon, who having removed a child's appendix, accepts the mother's estimation of his own prowess; he does not know the self-satisfaction of the pathologist, when with all the cards before him on the autopsy table, he shows where the others were wrong; nor does he know the thrill that must be a dermatologist's when he sees condylomata disappear under the magic spell of salvarsan. But occasionally the depressing therapeutic horizon of the physician is broken by an oasis, and, even though it may prove to be a mirage, it is stimulating while it lasts. The liver-treatment of pernicious anæmia looks from here like the best oasis we have ever known. The salvarsan treatment of syphilis is probably as valuable, but it is technically difficult, it is expensive, it cannot be depended on without the help of mercury and potassium iodide, and it has a very limited use in well established visceral syphilis. Lugol's solution in Graves' disease has an effect that is usually just as prompt and produces a remission almost as complete; its effect is, however, not always permanent. The insulin treatment of diabetes is attended with many technical difficulties and is only palliative; it prevents the patient from dying of acidosis, but it allows him to die a very few years later with arterial disease. The sanatorium treatment of tuberculous conditions, though a great advance on previous methods, is prolonged, laborious, expensive, and uncertain. The liver treatment promises to eclipse them all for efficiency, simplicity, and permanence of effect. The only regret one can feel is that a treatment so effective is not applicable to a more common disease.

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"Do not allow your conscientious devotion to physiology, bacteriology, anatomy, and the like make you forget that the Muses and Graces also require the ritual of an occasional libation and handful of crackling salt." Thus declared Mr. Robert G. Hogarth, F.R.C.S., senior surgeon at the General Hospital, Nottingham, and ex-president of the British Medical Association, in an address which he gave yesterday to students at the London (Royal Free Hospital) School of Medicine for Women. An exclusively scientific training, he said, often left something to be desired in the way of mellowness and ripeness, and the professional man or woman of to-day suffered serious handicap unless his or her mind was well garnished and sensitive to the impression of what the Greeks called "the beautiful." They should not disperse their energies too widely, but at all hazards narrowness must be avoided.

ENDOMETRIOSIS

A PATHOLOGICAL STUDY OF THIRTY CASES

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STIMULATED by the recent work on endometrial implants in the female pelvis an analysis was made of the routine surgical material received in this department over a period of five years. The material was examined microscopically with the idea of ascertaining the occurrence of misplaced endometrial tissue. The ovaries and Fallopian tubes of approximately seven hundred and fifty cases were reviewed. Microscopic sections which showed definite glandstructures, like those seen in the uterine mucosa, and having a vascular stroma typical of endometrial tissue, often showing signs of hæmorrhage, were accepted as evidence of endometriosis. Lesions showing a dense fibrous connective-tissue wall, with endothelial cells bearing hæmosiderin pigment were not included in our series, as we were unable to determine their origin.

The presence of endometrial structures in various ectopic positions was described by Cullen in 1894. He advanced a Müllerian duct theory for their presence, and called them extra-uterine adenomyomata. He also described a subperitoneal type, which he believed was derived primarily from the glands of the uterine mucosa. Russell in 1899 described endometrial tissue in the ovary, which likewise he believed had its origin from the Müllerian duct. Iwanoff described a similar condition, but advanced the theory that it arose from serosal inclusions following an inflammatory process. He believed that there was a metaplasia of the serosal elements to form glandular structures. Iwanoff's theory was supported by Pick, Aschoff, Robert Meyer, Klages, Bazy and Semmilink. V. Recklinghausen advanced the theory that the condition arose through some disturbance in the Wolffian duct. Meyer, however, has shown that these aberrant structures may occur in situations which have not been in contact with the Wolffian duct. No satisfactory explanation has been given of the characteristic vascular stroma associated with the glandular structures.

In 1921, Sampson's first publication on the origin of endometrial masses in the ovary and other areas, put a new light on the whole subject. He reported twenty-one cases in which he found endometrial tissue upon the ovaries and other pelvic viscera. He concluded, "that the implantation of benign endometrial tissue upon the surface of the various structures in the female pelvis is a very common occurrence." He believed it was due to a mechanical backflow, by way of the Fallopian tubes, of bits of exfoliated menstrual endometrial tissue. These fragments of endometrium he believed contained viable cells. They become scattered over the ovary and pelvic viscera by way of the peritoneal ostium of the Fallopian tubes. They become implanted and grow either by invading the structures with which they come in contact or by growing diffusely along the surface. Sampson speaks of the ovary as a "hot-bed" or "incubator" for this ectopic tissue; from it other implantations may occur.

Jacobson, working in conjunction with Sampson, has produced experimentally the same lesions in rabbits and monkeys. He planted uterine curettings, obtained by hysterotomy, on various surfaces in the pelves of these animals. The implants were successful and passed through the cyclic menstrual changes of the normal uterine mucosa.

CLINICAL FINDINGS

In none of the cases which were studied was a clinical diagnosis of endometrial implant, or endometriosis made prior to operation. All the patients sought relief for various pelvic and abdominal conditions. A summary of the clinical diagnoses made in our thirty cases follows: twenty-one were diagnosed, "ovarian cyst with retroversion;" eight were diagnosed, "leiomyomata;" two, as "carcinoma;" and one case, as intestinal obstruction."

The average age was thirty-five years, the

oldest being fifty years and the youngest twentyfour years. Nineteen of the patients were married, eleven were single. Of the married women
only three had children. Sixteen had never
been pregnant. Of those who have had children,
two were primiparæ; the other patient had four
children. Symptoms of endometriosis did not
appear until four, twenty-eight, and twentythree years, respectively, after delivery. In
Sampson's report seven years was the shortest
time intervening between childbirth and the
onset of symptoms.

As far as could be ascertained from the clinical records, none of the patients had any disturbance in the regularity of their menstrual cycles, nor were there irregularities in the amount of the flow during menstruation. One patient had intermenstrual bleeding which was quite marked, but present only a short time before her admission to the hospital. Practically all complained of some pain or distress at the menstrual cycle. It varied in locality, usually in the back and lower abdomen, and was described as crampy or severe. This, in some cases, was the only reason for seeking medical relief.

Constipation varied throughout the series, from a slight to a very marked degree. One patient had diarrhœa at her menstrual periods. Four had painful defacation, which was exaggerated with the menses. Two complained of pressure in the rectum during menstruation. The constipation in all cases was relieved by medication. Nine of the patients had nausea and vomiting accompanying menstruation. In several this was severe enough to cause them to seek the advice of a surgeon. One case was admitted with all the symptoms of a subacute intestinal obstruction, about six days having intervened between the last day of her menstruation and her admission to the hospital.

In all cases in which follow-up notes were available, recurrence of symptoms apparently varied with the type of operation performed. Where conservative measures were employed and a diffuse involvement of the pelvis was present the patients invariably had recurrence of their symptoms. When the uterus, tubes, and ovaries, were removed the patients convalesced very well and had no return of symptoms. Several of the cases, which have recently returned because of recurrence of their symptoms, are having radium

and x-ray therapy, in the hope that the function of the ovaries may be so altered, as to bring on an artificial menopause. One patient, over a period of five years, had had an exaggeration of her symptoms which ceased after the menopause. She is now free of all distress and is able to carry on with comfort. Had she been younger and more remote from the natural climacteric change she might have had to undergo further treatment.

Synopsis of Clinical Data—(1) Dysmenorrhœa was present in practically all cases. (2) Constipation was variable. Painful defæcation, tenesmus and diarrhœa, exaggerated at the menstrual cycle, were the most positive symptoms. (3) The average age incidence of this condition in our series was thirty-five years. (4) Sterility was frequent, pregnancy only occurring in three of nineteen married women. (5) Gastro-intestinal symptoms were quite vague in character, and were not significant.

An analysis of the lesions described at operation showed that the degree of involvement varied. The outstanding observations recorded by the surgeons were as follows: Cysts of the ovaries were present in practically all the cases. These cysts contained a chocolate coloured or blood-tinged fluid, which varied in consistency from a serous to a brown putty-like material. Many of these cysts were ruptured during removal. Dense adhesions, unlike those arising from acute inflammatory processes, were encountered in practically all of our cases. These adhesions bled quite profusely. They were noted in the following localities: (a) Between the ovary and the Fallopian tubes in practically all the cases, the majority being bilateral. (b) Between the adnexæ and the posterior surface of the uterus in half of the cases. (c) Between the adnexa, sigmoid and rectum, most commonly on the left side. (d) Between the posterior surface of the uterus and the recto-vaginal septum: obliterating the pouch of Douglas in one-third of the cases. Para-ovarian cysts were present in five of the cases, and leiomyomata in eight.

PATHOLOGY

All the data here recorded were taken from the gross descriptions dictated at the time when the material was received in this department. The gross descriptions of the overy were of interest, because of the number of points typical of endometriosis which were described without a knowledge of the lesion. Cysts were noted in practically all the cases. These were of various sizes, ranging from 0.7 cm. to 7 cm. in diameter. The average size however was 1.5 cm. to 2 cm. The contents varied from a blood-tinged serous fluid to a chocolate brown putty material. Seventeen of them showed definite chocolate brown granular material. In five of the cases, the cysts had been ruptured on removal, and a chocolate granular material escaped. Puckering and wrinkling of the surface of the ovary were noted in several cases. The Fallopian tubes were described as having little gross change, save some tortuosity and a few adhesions. In one case, the cæcum was diffusely involved in endometrial implants leading to an obstruction and kinking of the terminal ileum. Over the surface of the cæcum were numerous stellate puckered areas, the centres of which showed bluish-brown discolourations about 1 to 3 mm. in diameter. These areas contained small amounts of chocolate coloured material.

In the majority of cases the sections which are filed with the records were used for study. Others were recut. Histologically, there were found glandular structures lined by a columnar epithelium with centrally placed nuclei, identical with those seen in the uterine mucosa. Surrounding these glands was a loose stroma made up of small round and ovoid cells, having deeply stained nuclei. In the stroma there were small vascular channels lined by a single layer of endothelial cells. Many of the glands and the neighbouring stroma showed evidences of old and recent hæmorrhage. In some cases the lumina of the glands contained many red blood cells, in others a few endothelial and a few red blood cells were present. The red blood cells were in all stages of disintegration. In some of the cases the tissue had been removed during the menstrual cycle. It showed the typical changes of menstruation seen in the uterine mucosa, that is, there was an increase in the cellular elements of the stroma, the glands were enlarged and dilated and filled with blood cells. The vessels in the stroma were engorged and some had ruptured leading to a diffuse extravasation of red blood cells throughout the stroma. Still other sections showed the end-result in the men-

strual cycle, that is the glands were somewhat tortuous with slight infolding of the epithelium and contained red blood cells in various stages of degeneration. Large endothelial cells bearing hæmosiderin were present in the stroma. A series of stages corresponding to the phase of the menstrual cycle during which the tissue had been removed was found.

In twenty-three of our cases the ovaries were involved. Two of them showed implants present on the serosal surface of the uterus and broad ligaments. Two were cysts which had been removed from the broad ligaments. Two were implants on the serosa of the Fallopian tube. One involved the execum, ascending colon and the terminal ileum.

A number of sections of the ovary were encountered in which there was a dense fibrous wall lining a portion of a cyst. This wall was irregular and at intervals showed groups of endothelial cells bearing hæmosiderin. There were no evidences of luteal cells, either old or recent, surrounding these areas of dense connective tissue. Because there were no epithelial cells present, and no further material, these cases were ruled out. However, this finding is characteristic of the large chocolate or tarry cysts found in the ovary in cases of endometriosis. We have since found several such chocolate cysts and by careful search of the inner wall, found areas which were reddish brown and granular in appearance. Histologically, these show a dense fibrous connective-tissue wall, lined on the inner surface by a single layer of columnar epithelium having centrally placed nuclei. Beneath the epithelium were many endothelial cells filled with hæmosiderin. The sections of the cæcum showed throughout its wall glandular structures in a loose highly vascular stroma. characteristic of endometrium of the uterus. Some of this endometrial tissue had infiltrated the wall almost to the submucosa. Without careful examination and a knowledge of the invasive characteristics of endometrial implantations, one might be led to make a diagnosis of adeno-carcinoma.

In several recent cases we have had opportunity to study endometrial implants in further detail. One was diagnosed, clinically, carcinoma. The uterus when removed was carefully sectioned. A diagram was used to illustrate the

areas from which blocks were taken for section. A rapid section done at the time of operation showed typical glandular structures with stroma and hæmorrhage throughout the latter. A diagnosis was made of endometriosis. Twenty-nine blocks were taken from various parts of the uterus and adnexa. Seventeen of these showed characteristic areas of endometrial tissue. Their distribution was: nine were found on the anterior and posterior surfaces of the right and left ovaries, six were found on the broad ligaments extending through to both surfaces, and two on the posterior surface of the uterus in the region of the dense adhesions. Nine of the other sections were taken from the anterior surface of the uterus which was free from adhesions, and one was from the mucosa of the uterine canal for purpose of comparison. The majority of the blocks from the ovaries were taken from small, puckered, areas having bluish brown centres. There was one large cyst of the left ovary measuring 2.5 cm. in diameter. It contained a brownish granular material. The areas in the broad ligament were stellate and puckered and the puckering extended to both surfaces. On the anterior surface of the left broad ligament were two small blood cysts each measuring about 1.5 mm. in diameter. These were shown microscopically to be recent implants. The masses from the posterior surface of the uterus were typical endometrial structures with no smooth muscle response around them. The sections from these various areas when compared with the uterine mucosa showed the same phase in the menstrual cycle.

Summary of the Histo-Pathology.—(1) The gland structures are lined by a single layer of columnar epithelium with centrally placed nuclei. The lumina of these glands show a varying degree of distension and retention of blood elements. (2) The stroma accompanying the gland structures is made up of large and small ovoid cells, whose processes form a delicate reticulum. There is a definite vascularization of this stroma. Scattered throughout can be seen areas of both recent and old hæmorrhage, depending on the relationship to the last menstrual The hæmorrhage may be seen, either diffusely through the stroma as in recent hæmorrhage, or in large endothelial cells as hæmosiderin pigment ir the older hæmorrhage. (3)

These endometrial implants show a tendency to invade the structures on which they lie, or to grow diffusely upon the surface. Recent implants appear as small blood cysts on the serosal surfaces. Older implants show either puckering with dense adhesions or cyst-formation. (4) These implants undergo changes similar to those seen in the normal menstruating uterine mucosa.

DISCUSSION

Benign endometrial tissue in ectopic areas in the female pelvis is not uncommon. We have recovered, in thirty cases, definite endometriallike tissue in sections of ovaries and other pelvic structures. The majority were sectioned with no idea of this condition being present. Had this material been sectioned and handled with the idea of finding endometrial implants, we feel certain more cases could have been recovered. As to the cause of this condition, we are unable to arrive at a conclusion, but we are inclined to agree with Sampson. The experimental work of Jacobson has shown that this tissue may be implanted. The theory of a mechanical back-flow through the Fallopian tube, we believe, is superior to the serosal inclusion theory, the Müllerian and Wolffian duct theories of Cullen and other workers. In our series, leiomyomata and retroversion of the uterus could account for distortion of the uterine canal and escape of its contents through the Fallopian tubes, in the majority of cases.

We believe that the diffuse adenomyoma of uterus described by Cullen is an entirely separate condition, in that there is a smooth muscle response, around the gland structures. This was not seen in our cases.

The condition here described is a definite clinical entity. These patients had complete relief of symptoms where radical surgery was employed. Those patients on whom radical measures were not used had a return of symptoms. One patient had relief following the menopause.

The occurrence of this condition upon the excum has brought to mind the probability that some cases diagnosed as adeno-carcinoma of large bowel, more especially of the excum and the recto-sigmoid, and which have outlived the expectancy of carcinoma, are probably cases of endometriosis. The excum in our case showed

gland structures invading from without in all the layers of the muscular coat.

Bailey, while agreeing with Sampson as to the origin of these endometrial implants, attempted to differentiate two different types. He called one an endometrial type and the other a Fallopian tube type. Bailey's Fallopian tube type shows no stroma about the glands, and may readily be due to serosal inclusions or infolding following inflammatory changes, or to remnants of Gärtner's ducts or other embryonic structures. In our study we have no evidence to support Bailey's classification.

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CHRONIC CHOLECYSTITIS*

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HRONIC cholecystitis is a common disease, and, owing to the variability of its symptoms, is one well calculated to test the physician's diagnostic acumen. It is true that in many cases, as a result of careful questioning and skilful examination of a patient with gastric symptoms, evidence will accumulate which clearly indicates the presence of chronic inflammatory changes in the gall bladder, but more often the clinical picture produced by this condition is ill-defined and such as may be simulated by other intra-abdominal lesions. Epigastric distress, flatulence, bloating, nausea and vomiting, may be due to chronic cholecystitis, but may also occur as symptoms of chronic appendicitis, a peptic ulcer, gastro-intestinal cancer, chronic colitis, chronic pyelitis, or intrapelvic lesions. The same symptoms, usually with the addition of constipation, characterize the "chronic intestinal invalid," an asthenic individual in whom, apart from a degree of visceroptosis, no lesion can be demonstrated. They are frequently described as neurotic subjects whose inability to cope with the problems

of their daily lives is reflected in a functional derangement of digestion; such "nervous indigestion" is common, far more common than indigestion due to demonstrable organic lesions, and offers a therapeutic problem which has been well discussed by Alvarez.

In attempting to solve the diagnostic problem presented by the chronic dyspeptic, rarely is it safe to rely upon information gained by any one method of examination. Evidence obtained by an analysis of the patient's symptoms and previous medical history, by physical examination, by radiological examination, and by chemical examination of the gastric contents, urine, and blood plasma, must be evaluated and correlated before a final decision is reached. Undoubtedly, most valuable assistance can be obtained from a competent radiologist. latter's verdict as to the presence or absence of a peptic ulcer, gastro-intestinal cancer, gastroenteroptosis, duodenal ileus, or an atonic or spastic condition of the colon will, by the subsequent history of the patient, by operation, or by autopsy, be found to be correct in a very high percentage of cases. In the diagnosis of chronic appendicitis or chronic cholecystitis

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radiological evidence is less reliable, although valuable confirmatory evidence may be obtained as a result of examination of the gall bladder by Graham's method. Differential diagnosis between chronic cholecystitis and duodenal ulcer may be so difficult that, as Bloch² states, "Nothing short of an exploratory operation will clarify the diagnosis."

A knowledge of pathology is essential for accurate clinical diagnosis, and, as in no field of medicine is this truth better exemplified than in that of the gastro-enterologist, it is advisable to review briefly certain features of the pathology of chronic cholecystitis before discussing its differential diagnosis and treatment.

PATHOLOGY

Cholecystitis is due to the lodgment of bacteria in the wall of the gall bladder. These bacteria may be streptococci which have forced an entrance into the systemic blood stream at the site of an infected tonsil or an infected tooth, and, finding in the tissues of the gall bladder a suitable environment, have survived and colonized there. The bacteria may be streptococci or colon bacilli which, having entered the portal blood from an inflamed appendix, an infected hæmorrhoid, a peptic ulcer or other focus of infection in the field drained by the portal vein, are carried to the liver and thence migrate through lymphatic channels to the gall bladder. The bacteria may be streptococci which have entered the lymphatics of the duodenum at the site of an ulcer and passed up the lymphatics along the common bile-duct and cystic-duct to the gall bladder.

It is uncertain by which route infection usually occurs. Each has its advocates, but the weight of evidence would seem to favour the belief that a common path is in the portal blood to the liver, and thence by lymphatic channels to the gall bladder. Infection by the passage of bacteria up the lumen of the bile-ducts from the duodenum probably does not occur.

Subsequent to the lodgment of the bacteria an inflammatory reaction of varying intensity occurs in the infected tissues. If the organisms are of high virulence an acute cholecystitis ensues; if of a slightly virulent strain the inflammation is of a less destructive type, which may not manifest itself by acute symptoms, but which may persist for a long time or, subsiding,

again flare up as a result of the lodgment of fresh bacteria derived from the primary focus of infection. The course of such a case is thus frequently characterized by periods of activity and periods of quiescence, leading eventually to widespread destruction of the gall bladder mucosa and great increase in the amount of connective tissue throughout the subserous and muscular coats, which show a more or less well marked lymphocytic infiltration. The destruction of the mucous membrane may be preceded by irritative overgrowth of that structure, so that it appears thick and velvety; often areas of mucosal overgrowth alternate with areas that have been almost denuded of lining membrane. The wall of the viscus is thicker than normal, and, from the serosal aspect, appears whitish in colour. Not infrequently, gall-stones form in the mucoid bile which is apt to stagnate in the gall bladder, and while this occurrence may add to the patient's discomfort, it may also, through the occurrence of biliary colic or the visualization of the calculi by the x-ray, simplify the clinical diagnosis.

Considering the close lymphatic connection between the gall bladder, liver, pancreas, duodenum and pylorus, and considering also the facility with which bacteria can pass in either direction along lymphatic channels, it is not surprising that a persistent infection in any one of these structures is almost certain to lead in time to involvement of one or more of the others. Thus, the association of gall bladder disease and peptic ulcer is clearly brought out by Eusterman³ who reports a series of 1,075 cases of gastro-duodenal ulcer in which 40 per cent showed pathological changes in the gall bladder. The liver in cases of chronic cholecystitis invariably reveals some grade of hepatitis, varying from a slight lymphocytic infiltration and slight fibrosis in the portal spaces to a well marked scarring, visible to the naked eye, and most marked in, and often confined to, the inferior portion of the right lobe. That the pancreas also shows chronic inflammatory changes in many cases of prolonged gall-bladder infection is clear from autopsy studies, and also is indicated clinically by the fact that patients with cholecystitis of long standing frequently show traces of sugar in the urine passed after a meal, or can be shown, by the administration of a glucose test-meal and subsequent examination of the blood, to have diminished carbohydrate tolerance. It is probable, indeed, that chronic cholecystitis is an etiological factor in some cases of true diabetes mellitus.

It is clear therefore that faced with a case of old standing infection of the gall bladder, an endeavour should be made to determine the condition of the liver, pancreas, stomach, and duodenum before outlining therapeutic procedures. Indeed, to these organs so commonly involved together in chronic inflammation, must be added another, the appendix. Patients who suffer from true chronic appendicitis, or repeated acute attacks, usually show chronic inflammatory changes in the liver, from which infection may spread to the other members of the upper abdominal group. Whether the bacteria pass from the appendix to the liver by means of the portal blood stream or by some devious lymphatic route is not easy to determine.

The discussion so far has dealt with frank chronic cholecystitis, in which the peccant organism, streptococci, colon bacilli, or typhoid bacilli, can usually be isolated from the tissues of the gall bladder and sometimes from the contained bile. In such a case, the organ by the time it reaches the pathologist shows the picture that has been described, i.e., fibrosis, areas of mucosal atrophy alternating perhaps with areas of hyperplasia, the presence of crypts of Luschka between the muscle bundles, and a more or less well marked lymphocytic infiltration. rarely, however, specimens are received in the laboratory in which the only pathological change to be detected is slight fibrous thickening of the wall, without marked cellular infiltration and without definite destructive change in the mucous membrane. Such specimens yield sterile cultures and it remains doubtful whether the fibrosis is to be interpreted as the result of a pre-existing inflammation which has subsided with destruction of the causative bacteria, or whether agents other than bacteria may not cause fibrosis of the gall bladder. As has been emphasized by McCrae4 and others, the condition of the gall bladder must depend to some extent upon the character of the bile, the character of the bile upon the function of the liver cells, and the function of the liver cells upon the composition of the portal blood. It is not difficult to conceive of a metabolic or bacterial poison absorbed from the intestine producing depression of function, slow degenerative changes, and eventually fibrosis in the liver and gall bladder.

In this connection, it is suggestive that such fibrosis of the gall bladder is invariably accompanied by a similar fibrosis of the appendix. Rhodenburg⁵ describes it as starting with a slight lymphocytic infiltration around the cells: of Meissner's ganglion; he emphasizes the coexistence of a similar lesion in the gall bladder, and is probably correct in his view that the condition is widespread throughout the splanchnic sympathetic system.

A study of the clinical history of an individual yielding an appendix or gall bladder of this type will show that he has suffered from tenderness over the appendix, over the gall bladder, and usually over the large intestine generally; in addition he has had gastric symptoms such as flatulence, bloating, and perhaps pain after meals. He may have suffered from constipation of the spastic type; rarely does he give a history of definite acute attacks and very rarely indeed is he benefited by operative interference.

To summarize this discussion of the pathology of chronic cholecystitis, the following conclusions may be drawn:

- Chronic cholecystitis is always secondary to a focus of infection elsewhere in the body, most commonly in the field of the portal circulation.
- 2. Chronic cholecystitis is properly regarded as a lymphangitis of the gall bladder wall and not as a catarrhal inflammation originating in the mucous membrane.
- 3. Chronic cholecystitis of long standing is invariably associated with chronic inflammation of the liver, and frequently with chronic inflammation of the appendix, pancreas, stomach and duodenum. The selection of therapeutic procedures should be governed largely by a decision as to the degree of involvement of these organs.

SYMPTOMS

As has been indicated, the clinical picture produced by chronic cholecystitis may be so ill-defined that exploratory operation is necessary to establish the diagnosis. The patient may complain of nothing more than chronic dyspepsia, of a type to be described, together with slight pain and tenderness in the gall bladder region; or in addition may suffer from periodic attacks of biliary colic, characterized by intolerable pain radiating into the chest and shoulders.

His general health may be little impaired, or symptoms of toxemia and general debility may dominate the picture.

The symptoms which may arise have been classified by Van Bergman⁶ as viscero-motor, viscero-sensory and viscero-visceral. Visceromotor symptoms comprise pylorospasm, cardiospasm, colonic spasm, and tension of the abdominal muscles in the right hypochondrium. Among viscero-sensory symptoms are pain and tenderness in the right hypochondrium, pain beneath the inferior angle of the right scapula; tenderness, and sometimes pain, on the anterior aspect of the right shoulder joint; tenderness over the right sterno-clavicular joint; over the inner edge of the right sterno-mastoid muscle at the level of the superior border of the larynx; between the ninth and tenth ribs in the midaxillary line and over the right trapezius muscle. These tender points have been described by Boas⁶ and explained by Westphal, who points out the connection between the sympathetic plexus of the liver and gall bladder and the right phrenic nerve, which in turn has connection with the cervical plexus.

As example of viscero-visceral symptoms may be mentioned vomiting, constipation, disturbance in gastric secretion, usually of the nature of a hypochlorhydria, and cardiac arrhythmias, and when it is remembered that to these symptoms may be added others, such as arthritis, general debility, mild pyrexia, and slight leucocytosis, which are due to the dissemination of toxins or bacteria from the inflamed viscus, it is obvious that the gall bladder may, when diseased, present an extremely complex clinical problem. The character and severity of the symptoms in a given case vary with the intensity of the inflammation, the production or non-production of gall stones, the degrees of involvement of other abdominal organs, and the nervous "make up" of the individual.

Biliary colic in its most typical form is due to spasm of the cystic or common duct, caused by the entrance of a gall stone into the lumen. Very severe attacks of pain may, however, occur in the absence of calculi, due either to overdistension of the inflamed gall bladder, or to contraction of that viscus against the complete or partial obstruction produced by kinking of the cystic duct (Aschoff), blockage of that duct by mucus or, as Westphal thinks, spasm of the sphincter

of Oddi. Such gall-stone colic usually occurs at night; the pain, severe at the outset, soon becomes agonizing; it is felt in the epigastrium and right side of the back and often radiates under the sternum to both shoulders. The patient may feel as if he were choking, and strive to vomit, usually without success; if he does succeed in vomiting, the pain is not relieved. The pulse usually becomes rapid and feeble and extrasystoles may appear. If the stone lodges in the common duct chills and marked elevation of temperature may occur (Charcot's fever). The attack may terminate abruptly, as a result of the falling back of the stone into the gall bladder from the cystic duet, or its passing through the sphincter of Oddi into the duodenum. Following the attack jaundice may appear, slight and transient if the stone has passed into the intestines, progressively more severe if it becomes lodged in the ampulla of Vater. At the same time, pain and tenderness under the right costal arch are almost invariably present, and the various sensitive points described by Boas can usually be demonstrated.

The diagnosis of biliary colic may offer diffi-Lesions which present a somewhat similar clinical picture are, perforated peptic ulcer, acute appendicitis, acute pancreatitis, interospasm, purpura, arteriosclerosis of the abdominal vessels, renal colic, epigastric or diaphragmatic hernia. If the pain is chiefly localized beneath the sternum and in the left side of the chest, a diagnosis between biliary colic and angina pectoris may be extremely difficult, especially if the latter is due to coronary thrombosis and does not yield to the administration of nitrites. If the attack of colic persists for some hours limitation of movement of the right side of the diaphragm may cause partial atelectasis of the lower lobe of the right lung. and in the presence of elevation of temperature and chills, a diagnosis of pneumonia may be made. Often the diagnosis is decided by exploratory operation, by the occurrence of manifest icterus, or by the demonstration of hyperbilirubinæmia and an immediate direct reaction by van den Bergh's test.

Severe biliary colic occurs in a small percentage only of cases of chronic cholecystitis and, therefore, a diagnosis usually must be attempted in the absence of a history of such attacks. If an adult individual complains of a distressing

feeling of distention, occurring shortly after the ingestion of food, and leading to belching; if this is accompanied by an ache in the epigastrium or right hypochondrium, which is sometimes felt beneath the right scapula and in the righ shoulder; if these symptoms are especially noticeable after the ingestion of fried foods, pastries, fruits, particularly apples, and of vegetables particularly cabbage, and if definite tenderness is present on pressure upwards under the right costal arch, a diagnosis of chronic cholecystitis may be made with some confidence. If, on further examination it is found that the gall bladder cannot be demonstrated radiologically after the administration of iodeikon, and if examination of the blood shows the presence of an excess of bilirubin, it may be taken as established that the patient has a pathological gall bladder.

In many cases of dyspepsia due to chronic cholecystitis the clinical evidence is, however, less decisive. Hyperbilirubinæmia is present in uncomplicated cases only if the associated chronic hepatitis is quite extensive; its absence does not militate against a diagnosis of gall-bladder disease.

Cholecystography is undoubtedly a valuable method in the study of gall bladder function but is open to many sources of error. To obtain a shadow of the gall bladder it is necessary that the capsules containing the dye be digested, that the dye be absorbed, that the liver cells be capable of excreting the dye, that the cystic duct be patent, that the gall bladder be not already distended with bile at the time that the dye is being excreted, that the absorptive power of the gall bladder be sufficient to concentrate the contained bile, and that the dye containing bile be present in the gall bladder at the time that the films are exposed. Failure to obtain shadows of gall bladders subsequently proved to be structurally intact, probably is due in most cases to failure in the absorption of the dye, or to emptying of the gall bladder before the photographs are taken. Non-absorption is the most common cause of error, and may be eliminated by intravenous injection of the iodeikon, a proceeding, however, which is not altogether free from danger.

It is to be remembered that a considerable degree of absorptive power may be retained by a gall bladder which has suffered quite extensive

structural damage as a result of chronic inflammation, and, therefore, such a gall bladder may yield a shadow of normal density after administration of iodeikin. Absorption from the gall bladder probably depends not only upon the presence of a sufficient area of adequately functioning mucosa, but also upon the condition of the underlying lymphatic channels. If large numbers of these are thrombosed or obliterated, absorption can probably not take place even in the presence of an abundance of mucosal tissue; while, on the other hand, adequate absorption can take place in spite of extensive destruction of the mucous membrane if the underlying lymphatics are intact. While, therefore, it is conceded by all authorities that the introduction of cholecystography has marked a distinct advance in diagnostic methods applicable to the gall bladder, the test is not infallible. clinically doubtful cases it is advisable that it should be repeated on two or more occasions. If this is done with scrupulous attention to technical details it is probable that fewer errors in diagnosis will follow acceptance of a consistently positive or negative result than will occur if an opinion is based upon clinical evidence alone.

The most significant sign demonstrable by physical examination in cases of chronic cholecystitis is the presence of definite tenderness in the gall bladder region. In attempting to elicit this sign the patient should be in the erect or sitting posture and the examiner's finger tips gently inserted under the right costal arch. If, then, towards the end of a deep inspiration, the patient winces or catches his breath the sign may be considered to be positive. This wince on the part of the patient is of greater significance than any statement he may make as to the pain which is produced. If the examination is carried out with the patient in the recumbent posture, tenderness over the transverse colon may be mistaken for gall bladder tenderness.

TREATMENT

In the presence of biliary calculi and in the absence of obvious contra-indications to surgery, cholecystectomy should be performed and any foci of infection in the abdomen or elsewhere adequately treated. If a stone is present in the common duct and the patient is jaundiced, operation should be postponed until the amount

of bilirubin in the blood has become stationary, and until the clotting time has been restored to normal by the injection of calcium chlcride solution intravenously. During the pre-operative period the patient should receive abundant glucose by rectum interstitially or intravenously.

In the absence of calculi, if the patient suffers constantly or intermittently from severe pain and tenderness in the right hypochondrium, and particularly if the pain is also felt in the right shoulder and beneath the right scapula, cholecystectomy is still the treatment of choice in young or middle-aged individuals, the pre-operative preparation being the same as in the case of jaundiced patients.

If the patient's chief complaint is epigastric discomfort and qualitative food distress, if he does not stress the factor of pain, and if definite and acute tenderness in the gall bladder region cannot be elicited after repeated examinations, operative interference is unlikely to give permanent relief, even if gall bladder dysfunction is clearly indicated by repeatedly positive iodeikon tests. In such a case, the excised gall bladder usually will show fibrosis of the type already described, will not contain stones, and will yield sterile cultures. It is undoubtedly diseased, but represents only part of the pathological picture, and though its removal will minimize the risk of gall stone formation, that is hardly sufficient compensation for an individual who has been exposed to the risk, the nervous strain, and the expense of an operation, without obtaining relief from the symptoms for which he sought advice.

Even though calculi be present, if the patient has passed middle-age, and has suffered from symptoms of gall bladder disease for a long period, operation should be advised only after a careful consideration of his individual case. In such a patient the probabilities are that the lesion has spread beyond the gall bladder, and that his liver, his pancreas, and, possibly, his myocardium, are more or less extensively involved. If his distress is not acute, and if his general health is well maintained, it is probably wiser to rely on palliative medical treatment.

Chronic cholecystitis cannot be cured by medical treatment, but much may be done to relieve the patient's distress. Dietary measures, and avoidance of constipation, are of the first importance. A bland diet should be prescribed, avoiding pastries, cooked fats, highly spiced foods, condiments and such fruit and vegetables as produce epigastric discomfort. Meals should be small and frequent, in order to avoid distension of the gall bladder.

There is a difference of opinion as to the efficacy of duodenal drainage. If it were definitely established that the introduction of a solution of magnesium sulphate through the duodenal tube did lead to relaxation of the sphincter of Oddi and emptying of the gall bladder, the value of the treatment would be obvious. Recorded observations with regard to this occurrence are, however, at variance and the value of such treatment is, therefore, doubtful. In any event drainage of the gall bladder through the common duct can probably equally well be accomplished by the avoidance of long periods of fasting, and by the administration of concentrated solution of magnesium sulphate in small doses by mouth. Antiseptics, such as mercurochrome or hexamine, are probably valueless in the treatment of chronic cholecystitis, although Hurst reports good results from the latter, given in huge doses. He administers 100 grains three times daily, with sufficient alkali to avoid splitting up of the hexamine by the acid of the stomach.

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Sugar Tolerance as Aid to Diagnosis.—Allan Winter Rowe, Boston, presents the details of a quantitative method for the determination of the sugar tolerance or better. "assimilation limit"; its standardization with groups of normal controls, and the results of its application to a large group of cases presenting a variety of disease

conditions. Pure galactose is given by mouth. A variety of non-endocrine conditions, among which lesions of the central nervous system. syphilis, primary anæmia, malignant tumours and liver diseases may be enumerated, tend to lower the tolerance, while serious renal disease may increase it.—J. Am. M. Ass., Oct. 22, 1927.

NEPHROSIS OF THYROID ORIGIN

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IN the previous paper of this series* three nephrosis cases were reported; one, of nephrosis associated with myxædema, which after thyroid administration for a few months returned to, and has remained, normal during three years; the second, exhibiting myxœdema and tetany, benefiting greatly by thyroid extract combined with Collip's parathyroid extract, but dying subsequently from an intercurrent infection; the third case, of low mentality, with marked emaciation, and high blood serum calcium content, which under thyroid administration improved considerably, with disappearance of albuminuria, increase of weight to above the normal, and some improvement in mentality.

This paper reports three additional cases: (1) an uncomplicated case of thyroid nephrosis of long-standing, materially improved by thyroid treatment; (2) a case which did not respond to thyroid treatment alone, but with the addition of Collip's parathyroid extract yielded readily and was controlled afterwards with thyroid extract; and (3) a case of nephrosis associated with pregnancy, in which after four unsuccessful pregnancies, the fifth, controlled by thyroid medication, was successfully terminated with the birth of a normal child. The possibility of such beneficial effect as is exemplified in the third case, was referred to in the previous paper.

CASE 1

Mr. N., aged forty-four; height, 68 inches; weight, 220 lbs. (Fig. 1).

Previous History.—Born in Scotland. He had had measles and influenza several times, the last occasion being in 1919. He was refused insurance in 1913 on account of albuminuria. In 1923, ædema was first noted in the lower limbs, and was progressive until he entered the Winnipeg General Hospital in October, 1926.

Examination revealed a man suffering from orthopnæa. He appeared to be anæmic, and had marked ædema with fluid oozing from left leg. There was considerable fluid in the peritoneal eavity and pleuræ. The skin was dry, rough, and scaly, especially the palms of the hands and the soles of the feet. The hair of the head was thin on the scalp and outer third of the eyebrows. There was a certain amount of general arteriosclerosis, with marked arcus senilis. The fundi of the eyes were negative. The heart sounds were normal. The pulse was 70; blood pressure was systolic 126, and diastolic 86. The urinary output was 400 to 600 c.c. in the twenty-four hours; marked albumen (0.7 per cent), with granular, hyaline, and fatty casts; no blood cells. The phenolsulphonephthalein dye test: first hour, 10 per cent; second hour, 8 per cent. Urea-concentration test: first hour, 1.4; second



Fig. 1.—Case 1.—Before treatment November 8, 1926.

^{*} J. R. Davidson, Canad. M. Ass. J., Sept., 1926, xvi, 1059.

hour, 1.5. Blood findings: red blood cells, 2,200,000, white blood cells, 11,800; urea-N., 28.7; ereatinine, 1.8; uric acid, 2.6; cholesterol, 309; chlorides, 480 mgs. per 100 c.c.; serum-calcium, 7.9; serum-albumin, 1.2; glbbulin, 2.5; fibrinogen, 0.5 per cent. Basal metabolic rate, -32 per cent. Wassermann test was negative.

This patient was put on a diet rich in vitamins, with fairly high protein, low fat, and high carbohydrate. The last had to be reduced on account of glycosuria later on. He was given desiccated thyroid extract, one grain per day, gradually increased to twelve grains per day, when the urinary output had increased to more than 2500 c.c. in the twenty-four hours. His weight began to decrease, continuing until it reached 120 lbs. (a loss of 100 lbs.), (Fig. 2), and the basal metabolism rose to within normal limits.



Fig. 2.—Case 1.—After treatment March 8, 1927.

He was discharged from the hospital, taking thyroid extract six grains per day, which controlled the ædema, and kept the basal metabolism within normal limits.

He reported a year later for examination. His physical condition was much improved. The findings were as follows: his weight was 160 lbs. (Fig. 3). He was working in a taxicab office, twelve hours per day. He continued taking thyroid extract, six grains daily, except once when his supply got short and he had to reduce the dose for a time. When the dose was reduced, the ædema began to return, but disappeared when he returned to the usual dose. At this time he was free from ædema, except some nights after a heavy day's work, when it would be noticeable in the lower limbs. His pulse was 80; blood pressure was systolic 148 and diastolic 90. Basal metabolic rate, + 2 per cent. Blood findings: red blood cells 2,680,000; white blood cells 6000; urea-N., 35.1; creatinine, 2.1; uric acid, 3.6; cholesterol, 227; serum-calcium, 10.3 mgs. per 100 c.c.; serum-albumen, 2.1; globulin, 1.9; fibringen, 0.45 per cent. Dye test (intravenous); a fifteen minute test, insufficient to estimate; a thirty minute test, insufficient to esti-



Fig. 3.-Case 1.-A year later December 4, 1927.

mate. Urine; output 2000 c.c. in twenty-four hours; contained 0.45 per cent of albumen, a few granular and hyaline casts. Total nitrogen output, 9.3 grammes.

CASE 2

Mr. P., admitted to the Winnipeg General Hospital under Dr. C. R. Gilmour, April 30, 1927. His age thirty-two; his height, 643/4 inches; his weight, 115 lbs.

Previous History.—In 1910 he had osteomyelitis of the left tibia and fibula. The fibula was removed and later the ends were grafted to the tibia. In 1918 he had influenza and double pneumonia.

Family History.—His father died of tuberculosis; otherwise negative.

History of Present Illness.—It began on March 15th, following influenza. His left knee became swollen and painful. Two weeks later he developed pleurisy (left side), and coughed considerably. There were epistaxis and anorexia. A week later he passed very little urine. His limbs began to swell, and there was puffiness of the eyelids.

Physical Examination.—A middle-aged man, rather pale, eyelids puffy, and with general œdema. The eyes, nose, and throat were negative. The chest was negative, except for a few râles heard at the base of the lungs. Heart, normal. Blood pressure, systolic, 124, diastolic, 86. The abdomen contained a small amount of fluid, but was otherwise negative. The digestive tract was negative, except that achlorhydria was present. The left leg was scarred, and the knee ankylosed and much swollen. Urine: the amount was slightly below the normal, specific gravity, 1.010, marked albumen (0.5 per cent) and casts, no red blood cells. Urea concentration test: first hour, 1.7; second hour, 1.8. Dye test: first hour, 25 per cent; second hour, 20 per cent. Blood findings: urea-N., 16.8; cholesterol, 260; serum-calcium, 9 mg. per 100 c.c.; serum-albumin, 1.6; globulin, 1.8; fibrinogen, 0.4 per cent. Wassermann test, negative.

Treatment.—The patient was placed on a diet fairly high in protein and carbohydrate, but with the fat somewhat lower than in a normal balanced diet, with plenty of fresh fruit and green vegetables, and so containing a high vitamin content. He was given one half drachm of dilute hydrochloric acid in half a glass of water, and orange juice to be taken with his meals. He was started on desiccated thyroid gland, one grain per day, and this was increased gradually to twelve grains per day without any result. The ædema kept progressively getting worse. There was considerable fluid in the peritoneal cavity and both pleuræ, and the genitals were markedly swollen. By May 12th,

his weight had increased to 141 lbs., and his basal metabolic rate was -34 per cent. On June 14th he was given ammonium chloride fifteen grains three times per day, and three days later 0.5 c.c. novasurol. The urinary output increased to 2,400 c.c. per day, and in three days fell back to 200 c.c. On June 24th the above was repeated, with 1 c.c. novasurol. The urinary output increased to 5,600 c.c., and fell down again to 600-800 c.c. in the next few days. The novasurol was repeated, and the urinary output increased to 4.400 c.c. and fell again to 800 c.c. During this time his basal metabolic rate remained -30 per cent. He did not seem to respond to thyroid extract alone. At this stage, during a change of service on the wards, the patient came under my care. On July 11th, the ammonium chloride and the novasurol was discontinued, and the patient given 1 c.c. (20 units) of para-thor-mone (Lilly) every third day. The urine increased from 800 c.c. to 2,000 c.c., and the patient had a severe attack of diarrhea following the first dose of para-thormone. Following this, the output of urine keeping fairly high, the patient was soon depleted, and his weight on July 21st was 111 lbs. The serum-calcium, which was about 9 mg. per 100 c.c. when the parathyroid extract was first administered, was now at the high normal limit. The parathyroid extract was discontinued. At this stage, the basal metabolism began to rise. On July 27th his basal metabolism was -17 per cent, on August 17th -4 per cent. The dose of thyroid was reduced to six grains per day, which seemed to be sufficient to control the basal metabolism and ædema. On September 7th the patient's basal metabolism was +1 per cent. The albumen, which had been 0.5 per cent on admission, was 0.2 per cent, and he left the clinic taking thyroid gland six grains per day. He has since left the city to obtain work in British Columbia. No further report is available.

CASE 3

Mrs. M., aged twenty-five. Married in January, 1919.

Previous History.—Negative, except for appendectomy in 1920. She has had five pregnancies. The first was terminated March 15, 1921, at seven months, on account of cedema, albuminuria, and eclampsia. She was then in

hospital for six months. The second was terminated November 20, 1921, at four months, on account of albuminuria and ædema. The third was terminated on April 18, 1923, at eight months, on account of albuminuria and ædema, with a living child. The fourth was terminated at three months (December, 1925), on account of albuminuria and ædema. The fifth: when she was two months pregnant she came under my observation on March 26, 1927.

Examination revealed a woman slightly smaller than the average, with ædema of the lower limbs and eyelids. Eyes, throat, heart, and chest were negative. Blood pressure, systolic, 110, diastolic, 78; pulse, 68. Urine contained marked albumin, few granular and hyaline casts. Basal metabolic rate, -12 per cent. Wassermann test, negative. She had been advised that pregnancy should be terminated. Wishing to have a child if possible, she was willing to undergo any treatment that might be suggested. She was placed on a diet rich in vitamins, and desiccated thyroid extract one grain per day, which was increased to two grains per day. At the end of six weeks, the ædema had disappeared and there was only a trace of albumen. From then until the patient was confined on October 14th (two days previous to the normal date set), she was given thyroid sufficient to control the ædema and albuminuria. She was also given five drops of Lugol's solution twice a day on the first day of each week.

Blood Examination, on August 25th: Urea-N., 12.3; uric acid, 3.6; creatinine, 2.5; cholesterol, 264; serum-calcium, 11.3 mg. per 100 c.c.; serum-albumen, 2.4; globulin, 2.4; fibrinogen, 0.3 per cent. Basal metabolism, + 28 per cent. Urine, negative.

On October 14th she was confined. She had a normal labour, giving birth to a healthy male child. On the third day, when the milk appeared, two accessory mammary glands were noticed, one on each side along the anterior part of the axilla. She discontinued taking thyroid when confined. On November 10th, the ædema began to return, appearing in the lower limbs with puffiness of the eyelids. The urine showed marked albumen and a few casts.

She was again placed on small doses of thyroid, and will probably have to continue taking thyroid in the future.

Conclusion

From consideration of the response to thyroid treatment of these and of some other similar cases with low basal metabolic rates that have come under my care, it seems possible that when albuminuria precedes ædema by a period of months or years, the individual responds more readily to thyroid administration than when ædema accompanies or immediately follows the albuminuria. In the latter event, thyroid administration by mouth may yield little result; the second case of this series shows that when in addition Collip's parathyroid extract is employed such a markedly beneficial result accrues that subsequently thyroid alone becomes effective.

Even in such cases as the first now reported, where the nephrosis has been of such long standing that some degree of nephritis may have resulted, marked benefit follows thyroid treatment, converting a water-logged bedridden patient into a fairly active citizen, although, as is to be expected in such extreme cases, the albuminuria only slowly decreases and may never completely disappear.

I desire to thank Dr. Gilmour for permission to give details of the early treatment of Case No. 2, and also to thank Dr. Mary Mackenzie and Mr. Lars Sigurdson, the internes of the Winnipeg General Hospital, who assisted me with these cases.

Much interest is being evinced just now in the matter of improving the antirachitic powers of certain food-stuffs by ultraviolet irradiation. Hess (Proc. Am. Pediat. Soc., June 7, 1927), and Steenbock and Black (J. Biol. Chem., 1924, lxi, 405), found that antirachitic powers could thus be imparted to substances ordinarily inactive in this particular. Now, Supplee and Dow (Am. J. Dis. Child., Sept., 1927, 364), find that

the nutritive and therapeutic qualities of dried milk can be enhanced to an appreciable degree by exposure to ultraviolet rays, without destroying the vitamins A and C, provided that a proper technique is employed. Nor are the keeping properties of the milk impaired. The odour and flavour are not unpleasantly affected.

-A. G. N.

TWO CASES OF SPLENOMEGALY

By G. A. B Addy, M.D., C.M., F.A.C.S.

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W/HEN the spleen is recognized by any method of clinical examination as being enlarged, it is certain that it is at least twice the normal Any enlargement less than this, and often even this, cannot be discovered by palpation or by percussion. Perhaps, taking an average of all cases, the largest spleen is found in Gaucher's disease, the next in leukæmia, and the next in malaria. Then comes the series in which the spleen is large, but not excessively so, and, finally, there are cases in which the spleen is not demonstrably enlarged. It may be involved in Hodgkin's disease without being clinically enlarged; in pernicious anæmia it is not always enlarged, and the enlargement, when present, manifests no discoverable relationship to the gravity of the case. Splenomegaly is also met with in the more or less rare forms of infective disease associated with the names of Gaucher, Banti, V. Jaksch, Hayem, Widal, Chauffard, and Minkowski.

In my present paper I desire to say a few words on two cases of enlarged spleen which present points of interest: one of Banti's disease and one of splenomegalia lymphatica hyperplastica, the latter a condition described not long ago by Brill, Bache, and Rosenthal¹ of New York.

In Banti's disease we have to deal with a fibrosis of the spleen, involving, first the Malpighian follicles, and spreading outwards from the central artery, and later on manifesting itself in the splenic reticulum, leading to narrowing of the splenic veins, thickening of the splenic capsule and trabeculæ, endophlebitis, and, sometimes, calcification of the splenic vein. Cirrhosis of the liver, and a secondary anæmia, with the usual changes in the bone-marrow, eventually supervene. There is no glandular involvement. Banti's hypothesis is that the primary splenomegaly is due to an infective agent. The splenic enlargement itself produces another toxin, which, acting on the liver and on the splenic veins, produces the changes just described.

The first case is a typical instance of Banti's

disease: the second seems to fit in with the condition recently described as splenomegalia lymphatica hyperplastica. In this second case there was a very large spleen, extending into the pelvis and well across the mid-line. No enlarged lymph-glands could be felt in the axilla or neck, but, when the spleen was removed, I found general involvement of the mesenteric glands. These varied in size and were more or less discrete and movable. I unfortunately did not remove one for examination. The glandular enlargement seemed to be confined to the mesenteric nodes, as none was detected in other parts of the body.

CASE 1

M. S., female, aged 20 years; married. Her chief complaints on admission to the General Public Hospital (August 30, 1926) were: enlargement of the left side of abdomen, pallor, swelling of the feet, and shortness of breath.

About six months prior to her admission, when the patient was being treated for a miscarriage, the result of a fall, the doctor in attendance noted some swelling in the upper left side of the abdomen, which he told her was an enlarged spleen. At the time the mass was not giving any symptoms. About one month later she began to have shortness of breath and swelling of the feet. She also noted that her colour was becoming paler. She had had no hæmorrhages. She was much undernourished, had lost about fifteen pounds in weight since her illness began. About the middle of last May she came to Saint John, and was treated with radium, after which she was referred to the hospital and had her spleen removed.

Abdominal examination revealed the entire left side to be protuberant. There was no tenderness or rigidity. The spleen was palpable, filling the left side of the abdomen: it was smooth but firm. The liver was felt to have an uneven surface and irregular margin. No enlarged glands were noted in either cervical, axillary, or inguinal regions.

Chest; heart and lungs, apparently normal.

Blood examination on admission showed.—hæmoglobin 70 per cent; red blood cells, 3,600,000 per c.mm.; white blood cells, 3,400 per c.mm.; polymorphonuclears, 68 per cent; small mononuclears, 24 per cent; large mononuclears, 8 per cent; the urine on examination was found to be normal. The temperature, pulse, and respiration were normal.

Before operation, this patient had been treated with radium by Dr. W. F. Roberts, of Saint John. The

following is his report:—
August 5, 1926. Administration of 7,000 mgm. hours of radium was completed, dividing the splenic distribution into squares of two inches, and using 60 mgm. of radium element (needles) over each; filter: distance, two inches (block wood) and 2 mm. of brass.

Within two weeks of the application of the radium there was a reduction in the size of the spleen, from 25 to 30 per cent, with lessened swelling of abdomen.

Eyes that were heavy and without animation were now bright. She had for some time complained of being tired in the feet and legs; these symptoms were now much less marked. Her appetite, which was before practically negligible, was now good. Dyspnæa, which was marked before, was hardly noticeable. A diarrhæal condition, which was very marked for weeks previous to the administration of radium, was now replaced by two natural movements in the twenty-four hours. After four weeks' time the spleen was removed and found to

weigh 770 grammes.

The pathological report of Dr. H. L. Abramson was as follows: "Specimen consists of spleen, weighing 770 grammes. It is of regular outline. Its external surface is gray-red in colour. The capsule is somewhat wrinkled. The organ feels rather soft. Cut surface is brownish-red; Malpighian bodies are scant. No pulp comes off on scraping. There is considerable increase in the connective-tissue elements. It is of tough consistency. Microscopic examination shows almost complete replacement of parenchyma by a cellular connective tissue. Only here and there are present small groups of lymphoid cells. No evidence of germinal centres. The trabeculæ are greatly increased.

Diagnosis.-Fibrosis of spleen (Banti).

CASE 2

White male, aged 48 years; merchant. There was nothing of importance in the personal or family history. The patient was born in Canada, where he has always lived; at no time has he resided in tropical countries.

His chief complaint on admission was of the enlargement and hardness of the left side of the abdomen. The patient first noted this enlargement about nine months ago. His appetite had always been good, the bowels regular, and there was never any swelling of the feet. He never had had any pain, discomfort, or shortness of breath. He had a feeling as if he had taken a large meal. There was never any bleeding from the

mouth or bowel.

Physical findings.—The patient's appearance corresponded with the age given. He lay comfortably in bed in the dorsal decubitus, without pain or discomfort; his colour was rather pale. General examination of the head and neck revealed nothing abnormal. Reflexes were Veins were visible coursing from the abdomen normal. over the chest wall. The abdomen was large and symover the chest wan. The above metrical, being much enlarged on the left side, with veins coursing up and over its surface. A mass was visible on the left side, which moved with respiration. This could be seen to stretch the skin on deep breathing, and its outline could be made out. Palpation revealed a hard mass filling the left half of the abdomen and extending well into the pelvis. It was not tender, and could be moved. Two notches were felt on the medial border; the edges were rounded. The liver could be felt about three fingers' breadths below the costal margin and was not hard. The edge was sharp, and the organ was not tender. There was no tenderness in any part of the abdomen.

Examination of the blood.—Hæmoglobin, 80 per cent; red blood cells, 3,440,000 per c.mm.; white blood cells, 14,600 per c.mm.; polymorphonuclears, 18 per cent; small mononuclears, 78 per cent; large mononuclears, 2 per cent; eosinophiles, 2 per cent. The urine was normal. The Wassermann and Kahn tests were negative. X-ray treatment was given by Dr. Kirkland, radiologist, to this patient over the spleen, in four areas, on October 19th, 20th, 21st, and 22nd; and again over the same areas on November 5th, 7th, 16th, and 18th. The following factors were used: 5 M.A., 8-in:h spark gap; 8-inch distance; 4 mm. aluminum, for twenty minutes. The reaction in each case was rather severe, the patient having chills with sweating, nausea, and considerable prostration. These untoward effects were expected and were apparently justified in the reduction in the size and

consistency of the spleen, which diminished about onethird and became much softer.

Pathological report of Dr. Abramson, after removal of spleen by operation.—'Specimen consists of spleen weighing 4 lbs. 4 ozs. (600 grms.). The capsule is fairly smooth, red-gray in colour. It presents no adhesions. The notch is not very distinct. It is quite soft on palpation. Cut surface is of normal consistency; drips no blood. It is deep red in colour and shaded with pink gray nodules, some of which project above surrounding level, suggestive of tubercles.

Microscopical examination shows hyperplasia of

Microscopical examination shows hyperplasia of Malpighian bodies. Some of these are so large as to occupy two low power fields. The follicles consist wholly of adult lymphocytes, no lymphoblasts being in evidence. The central follicular vessel is very distinct, shows thickening of walls; and is not surrounded by the lymphoblasts which one finds normally. The reticular structure shows a great increase in young fibroblasts. Here and there are small hæmorrhages. The trabeculæ are much increased in size. Here and there are trabeculæ which take the stain poorly and appear to be undergoing necrosis. There is no evidence of giant or epithelioid or eosinophilic cells.

Diagnosis.—Giant follicle hyperplasia of spleen.

While the findings above described are not in complete harmony with those found by Brill, Bache, and Rosenthal, because of the absence of lymphoblasts, this discrepancy may be accounted for by the effect of radiation on the spleen.

DESCRIPTION OF THE OPERATION

The removal of the spleen, in the average case, is a relatively simple procedure, whereas, its removal in the presence of complicating adhesions may be so beset with difficulties and dangers as to be impossible. Both of my cases were fortunate in not having very many adhesions.

A vertical incision was made over the outer border of the left rectus muscle, with an extension in its upper end upward and backward, cutting through the costal cartilages of the eighth and ninth ribs.

Examination of the spleen in Case 1, revealed some adhesions to the abdominal wall, which were quite easily removed by blunt finger-dissection. A fold of peritoneum, the suspensory ligament was then met; with the ligament between my fingers and a long pair of curved scissors, it was cut and the spleen allowed to come down, leaving the upper pole free. The lower pole was displaced upward, and the lieno-renal ligament, together with its vessels, was divided between two ligatures. In both cases it was possible to deliver the spleen through the abdominal wound, and then ligate the pedicle en masse, after having applied

clamps. The removal of the spleen was followed by a gush of blood from the organ. In Case 2, practically no blood escaped from the spleen, as it acted much like a large sponge. No difficulty was experienced with the cardiac end of the stomach, or the tail of the pancreas.

The splenic space was closed with continuous catgut on a small needle. There was very little blood lost, except from the back-flow of the fibrosed spleen in the case of Banti's disease. The wound was closed without drainage.

In regard to the pre-operative treatment of the Banti's case by radium, and of the splenomegalia lymphatica hyperplastica by x-ray, the reports received from Dr. Roberts and Dr. Kirkland showed that the results were about the same in both; the spleens were reduced to about one-third the former size. The reaction from the x-ray was quite severe; there was none from the radium. After separation of adhesions, the cutting of the suspensory ligament

allowed the spleen to come down so that ligaturing of the vessels was a simple matter.

I have recently examined patient No. 2, the case of splenomegalia lymphatica hyperplastica, and found him in the best of health and spirits. Palpation of the abdomen does not reveal any tender points or enlarged glands. The case of Banti's disease I have not seen, as she lives in the neighbouring province, but I have learned from her friends that she has gone through a very severe attack of grippe, but is now feeling very well.

A differentiation between splenomegalia lymphatica hyperplastica and Gaucher's disease might be questioned. Gaucher's disease is a disease of childhood; this man was 43 years of age. In Gaucher's disease there are no enlarged glands; this patient had general enlargement of the mesenteric glands only.

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TWO FATAL CASES OF POISONING BY METHYL SALICYLATE

By Frank V. Woodbury, M.D., Halifax, and Albert G. Nicholls, M.D., Montreal

CASES of poisoning by methyl salicylate appear to be excessively rare, judging from the scanty references to the matter which appear in medical literature. Not more than thirteen have been reported to date, six of them being fatal, and not all of these are fully corroborated by post-mortem examination or chemical tests. We, therefore, think it desirable to place on record two instances which have been investigated by us, coming more especially before one of us (F. V. W.), in his capacity as Examining Physician for the city of Halifax.

CASE 1

W. J. McD., male, aged 25 years. This man was a bottler in a soda water and soft drink factory, and had had access in the course of his work to a bottle purporting to contain true oil of wintergreen. He was a discharged soldier, and since the war had suffered from a severe cough and shortness of breath, for which he received treatment from time to time. He was somewhat addicted to drink.

During the night of March 1, 1927, his wife woke to find him sitting on the edge of the bed vomiting. He said he thought he was going to die. She did not regard the matter as serious, but she woke up later to

find him dead. There was no history of any convulsion. The authorities were notified, and an examination ordered.

An odour of wintergreen, or of some similar substance, was noticed in the room and about the body. An autopsy was performed by one of us (F. V. W.) at 11 a.m., March 2nd. The body was cold and rigid. 11 a.m., All the blood was fluid, there being no clot detected at any point. The heart contained very little blood and the left ventricle was found to be in systole. The left lung was bound down to the pleura by numerous firm fibrous adhesions. The lungs were greatly engorged with blood and edematous throughout, but even the most congested portions floated in water. The urine was removed by means of a clean catheter. The stomach was tied off carefully with its contents, and this organ, together with the kidneys and left lung, were put aside for fuller examination, which was conducted by (A. G. N.).

The stomach was of average size, and the contents had been removed for chemical examination. The mucosa was swollen, glassy in appearance, with some adherent mucus, and was intensely congested throughout. There were no erosions. The colour was striking and unlike that of ordinary congestion, whether acute or chronic, being of an intense reddish purple tint. There was no smell of wintergreen noted about the organ. Microscopically, the superficial cells of the mucosa stained badly, and the blood vessels were greatly injected. The tubules were catarrhal.

The left lung was heavy, intensely congested, and edematous throughout, but without any evidences of consolidation. It presented the same glassy character and the same peculiar reddish purple colour found in the

mucosa of the stomach. The chief features, microscopically, were congestion and odema, with slight

desquamation of the lining alveolar cells.

The kidneys were swollen and soft. On section, the cut surface was glassy and presented a deep reddish purple colour. There was little distinction in colour between the cortex and medulla. Microscopically, the cells of the contorted tubules were very cloudy, often necrotic; the vessels, particularly of the glomeruli, were much injected. The picture was that of an acute parenchymatous degeneration.

For the result of the chemical examination we are greatly indebted to Dr. Owen S. Gibbs, Professor of Pharmacology in Dalhousie University, who kindly

undertook this part of the work.

The stomach contained 60 c.c. of a thick homogeneous fluid, resembling "Cream of Tomato Soup." The reaction of this fluid was acid, but not abnormally so. There was no volatile poison present, at least in sufficient amount to recognize by the odour. Tests for lead, arsenic, mercury, and antimony were negative. There was a very slight reaction for salicylates. Blood cells were not evident, but the material was coloured with blood pigment.

The urine found in the bladder measured 405 c.c., approximately. It was clear, pale yellow, and acid in reaction. There were some small deposits of cellular debris. Tests for albumin and blood were negative. There was a slight reduction of copper solution. There was no unusual odour. Distillation revealed no volatile

bodies

Forty-five c.c. of the urine, extracted with ether, gave 55 mgrms. of a crystalline body, having the appearance of, and responding to the chemical tests for, salicylates. This would give as the total amount of salicylate in the urine (calculated as the acid) about 0.5 gramme. This is the minimum, as the extraction was not quite complete.

CASE 2

S. A. R., a male child, well-developed, about twenty-two months old. The history was that sometime during the morning of July 2, 1927, the baby had found a bottle of oil of wintergreen, which was intended for external application. The bottle was broken, and an unknown amount was, presumably, swallowed. The parents, however, did not know positively if any of the drug had been swallowed, and there were no signs about the child's mouth. The bottle in question was of two or three ounces' capacity, and had been nearly full.

No symptoms were noted till late in the morning, when the child vomited an orange that he had eaten. In the afternoon he became troublesome, but was not thought to be ill. About ten o'clock p.m. a physician was summoned, who found the baby in tonic convulsions. The patient was sent to the Children's Hospital. Brandy, bismuth, camphorated oil, morphine, and calcium lactate were used. The child remained in a tetanic condition until death, which took place at 3 o'clock a.m., July 3rd.

An autopsy was performed by F. V. W. The find-

An autopsy was performed by F. V. W. The indings, briefly, were as follows. The blood was dark and fluid. The lungs were deeply engorged and ædematous. The stomach was nearly empty (castor oil had been used, and there had been some vomiting). The greater part of the gastric mucosa was pale, yellowish in colour, with a few congested areas about the greater curvature and the pylorus. An aromatic odour, but not suggestive of wintergreen, was noted. Tests for salicylates in the material from the stomach were negative.

About one ounce of clear urine was found in the bladder, which had a strong odour of wintergreen. Chemical tests showed the presence of a considerable quantity of methyl salicylate. No gross disease was found in the other organs. The cause of death was considered to be accidental poisoning with oil of winter-

green.

Before summing up what is known in regard to poisoning by methyl salicylate, we may be permitted to outline the latest case reported, that of Pincus and Handley, inasmuch as, while there was unfortunately no autopsy, the case was carefully studied from the clinical side, and some points are brought out in connection with the examination of the blood which have not been referred to in the earlier cases.

The patient was a child, twenty-two months old, who had swallowed not more than 60 c.c. of oil of wintergreen. Five minutes after ingestion a considerable portion of it was vomited. The urine possessed the odour of wintergreen, and the same could be said of a stool passed 51/2 hours after the oil had been taken. On admission to hospital, there was a slight elevation of temperature (99.6°), flushing of the cheeks, redness of the lips, but no cyanosis. The scleræ and conjunctivæ were injected. The extremities were cold. The breath smelled of acetone. About an hour after admission, convulsions began, and were repeated at short intervals for two hours. Cyanosis gradually developed and became general. The respirations assumed the Biot type. The pulse gradually became weaker, more rapid, and irregular. Ten or eleven hours after admission the urine had lost the odour of wintergreen. Death occurred fourteen hours after the drug had been taken. Rigor mortis and post-mortem lividity set in almost immediately.

The chief feature in the blood picture was a polymorphonuclear leucocytosis amounting to 81 per cent. (In infants lymphocytosis is the normal condition.) The blood chemistry tests showed acidosis, retention of phosphates and chlorides, and increase in the non-protein nitrogen, which would indicate severe damage to the kidneys.

REMARKS

Oil of wintergreen has been taken accidentally, with a view to suicide, and as an abortificient. The amount usually stated to be a fatal dose is one ounce (Sollman), though recovery has taken place after the ingestion of this quantity. On the other hand, less than 15 c.c. has more than once caused death. Nerthney's case, 6 a child of three years, died after taking 12 c.c. The smallest fatal dose was 10 c.c. in a

child of 21 months.9 Accidents from the therapeutic use of the drug seem to be unknown. This is due, no doubt, to the fact that oil of wintergreen is prescribed for external application only. At one time, years ago, it was a common practice to paint oil of wintergreen, and its congener guaiacol, on the skin in cases of rheumatism and even in tubercu-This practice has been discontinued, since it was realized that it was not free from danger, inasmuch as a great reduction in temperature, together with weakness, and even collapse, sometimes supervened. Sodium salicylate has also been known to produce untoward effects, when given internally, though no fatalities have been reported.

Where recovery has taken place, the following symptoms and physical signs have been noted: vomiting, purging, vertigo, general weakness, excessive appetite and thirst; rapid pulse, slow and laboured respiration; drowsiness and air hunger, acetone and diacetic acid in the urine; fever; contracted pupils, amblyopia; tremors, hemiparesis, and mania.

In the fatal cases, in addition, convulsions, tonic spasms, and opisthotonos may develop, followed by cyanosis, and collapse. The various authors lay stress upon epileptiform convulsions as the cardinal feature, clinically, in these cases. Pathologically-speaking, the outstanding features are, acute degenerative parenchymatous nephritis, acute gastritis, intense congestion and ædema of the lungs, and multiple small hæmorrhages in the pericardial

membrane, the pleuræ, and sub-durally. The convulsions and the paretic manifestations would appear to be explained by vascular disturbances in the cerebral cortex.

We would draw attention also to the fluidity of the blood, and to the extraordinary colour of the gastric mucosa, lungs, and kidneys, (Case 1), which strike us as characteristic. This is probably due to hæmolysis, and would harmonize with the intense cyanosis that has been observed during life, and the marked lividity after death.

Oil of wintergreen is a drug in rather common use, and it does not seem to be appreciated that it may be highly dangerous. More than thirty years ago, Laborde, on the basis of experiments conducted on animals, noted the toxic action of aromatic beverages made from natural and artificial essences, and showed that methyl salicylate must be classed among the poisons that produce epileptiform convulsions.

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Primary Carcinoma of Bronchi. — Thomas McCrae, Elmer H. Funk and Chevalier Jackson, Philadelphia, analyzed 187 collected cases, including their own. The evidence obtained suggests that carcinoma of the lung, which in the great majority of cases originates in a bronchus, is increasing in frequency. bronchial tumours appear to have a relatively low malignancy, and hence the hope that early diagnosis and intensive roentgen-ray therapy may be effectual in at least prolonging life. Early diagnosis should be made if the possibility of bronchial neoplasm is considered and careful studies are made. The early symptoms are usually those of bronchial irritation and the early signs those of bronchial obstruction. By bronchoscopy a positive diagnosis can almost always be made promptly and proper treatment instituted. Patients with obscure pulmonary and bronchial symptoms have a right to the benefit of bronchoscopy. Only in a very rare case is removal possible by the bronchoscope. Dependence must be on intensive roentgen-ray therapy, the details of administration of this depending on the judgment of the roentgenologist. With greater perfection in lung surgery, it is not too much to hope that removal of the lobe concerned may be possible. In any case, early diagnosis is essential.—J. Am. M. Ass., Oct. 1, 1927.

THE PROBLEM OF THE CHILD WITH HARE-LIP AND CLEFT-PALATE*

By J. D. McEachern, M.D.

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CLEFT-PALATE must be considered one of the most serious of congenital handicaps. The mortality is high in the early part of life, especially from respiratory infections terminating in broncho-pneumonia. But grave though the physical disability is, it is probably secondary in importance to the effect such a malformation has on the mind of the individual. A bad cosmetic result makes him an object of curiosity or even disgust to his associates, and the sound of his voice continually reminds him that he is different, or, as he often thinks, inferior to others. This malformation precludes the afflicted person from engaging in many lines of endeavour, and there are few occupations in which the individual with cleft-palate may engage without being greatly handicapped. One of our problems as a profession is to minimize, insofar as we are able, the results of this malformation. To call your attention to the problem; to point out what appears to me to be some of the reasons for our indifferent results; and to leave a suggestion or two which I hope may benefit the child with hare-lip and cleftpalate, are the objects of this paper.

Hare-lip and cleft-palate occurs in all parts of the world. According to statements of Murray, it is most frequent in India, China, and Java. On the other hand, it is almost unknown in Central Africa and in some of the South Sea Islands, for in those countries children born with this condition are immediately put to death by their parents.

Frobelius, whose figures may be taken to represent the condition in middle Europe, estimates one deformed child to 2,400 births. Edberg, of Sweden, estimates that of 125,000 children born in that country in a year, 130, or 1 in approximately 960, have hare-lip or cleft-palate. Davis, in 28,085 deliveries in Maryland, found 24 with congenital clefts of lip and palate, an incidence

of 1 in 1,170. I have been unable to find any statistics covering the incidence of this deformity in this country, but I think we may assume that conditions in this regard do not differ greatly in Canada from those in the United States. It is slightly more common in boys than in girls. For some unknown reason clefts occur four times more frequently on the left side than on the right.

The genesis of hare-lip and cleft-palate has been for many years the subject of medical research. While many theories have been advanced to explain the occurrence of these malformations, none of them are applicable to all cases. That heredity plays an important part there can be no doubt. It is given as the causative factor in from 10 to 20 per cent of cases by different investigators. Malnutrition and bad hygienic surroundings would seem to play a part also, for it is the general observation of men who see large numbers of cases that they come from the poorer classes of society. While the etiology in many cases is yet obscure, the formal origin of hare-lip and cleft-palate is not difficult to understand. Clefts of the lip and palate occur when the processes from which these structures develop do not become properly joined together.

The face is developed from five processes which spring from the primitive cerebral capsule. These are: the nasal, which projects beneath the fore brain; the right and left maxillary; and the right and left mandibular. These processes appear towards the end of the fourth week and are united by the end of the second month. The middle third of the upper lip, the premaxillary part of the upper jaw and the nasal septum, spring from the mesial nasal process; while the lateral third of the upper lip, the upper jaw, except the premaxillary portion, and the palate, spring from the maxillary process. When the mesial nasal process fails to unite with the maxillary process on either side,

^{*}Read at the annual meeting of the Manitoba Medical Association, Winnipeg, September 12, 1927.

the condition of complete bilateral hare-lip and cleft-palate is produced. There is a double cleft of the lip which extends into the nostril on the either side; the premaxilla with the rudimentary middle third of the lip (prolabrum) projects forward beneath the nose, and the horizontal process of the maxilla fails to unite with its

by providing the funds to enable these children to be brought in for operation.

The second factor: the physician who first sees the case. Discussion with physicians, and statements of parents, lead one to believe that the physician is frequently at a loss as to what advice to give the parents of a child with hare-lip and



Fig. 1.—Hare-lip. Note flattening of the nostril. The hare-lip must be made complete to correct the deformity of the nostril.

fellow of the opposite side and with the nasal septum. It will be readily understood how incomplete fusion of these processes on one or both produces the other varieties of this condition.

Anyone who becomes sufficiently interested in hare-lip and cleft-palate to observe closely the cases that have been operated upon cannot fail to be impressed with the high percentage of poor results, both cosmetic and functional. In trying to find the cause of this situation, it has seemed to me that there are three factors concerned. First, the parents: They are sometimes, though rarely, indifferent as to the fate of these children; not infrequently they are ignorant of what surgery can accomplish, and often their poverty prevents them from bringing their children within the reach of good surgical treatment. In this latter connection, the Junior Red Cross has been doing good work in this province



Fig. 2.—Photograph taken two weeks after operation on the lip. Same case.

cleft-palate. In this regard I may cite the case of a mother who brought her child five years old to me for this condition and stated that when the child was born she asked her physician what should be done about having the defect dealt with, and was advised "To wait until the child was four or five years old" before having him operated upon, as he would then "stand the operation better." Another mother brought her child, seven years of age, who was born with a unilateral cleft of the lip and palate. The lip had been repaired when the child was four months old and the mother stated that her family physician at that time told her that nothing could be done for the palate. The point about which there seems to be the most confusion is the time at which the operation should be done. Fortunately, there is now pretty general agreement among surgeons on this matter. Where the cleft is complete, the defect in the alveolar arch and lip should be closed early, preferably when

the child is three weeks old, although any time up to the age of three months is fairly satisfactory. The facial bones are then soft and can be readily moulded into position, bringing the alveolar arches into proper alignment, and correcting the deviation of the nose. When this has been done, the operation on the lip will be three or four months earlier. If the child learns to talk with eleft-palate, defects of speech are acquired which cannot be completely corrected later by operation on the palate. It is therefore essential that the operation on the palate be performed before the child learns to talk. The advantages in leaving the child until he



Fig. 3.—This child underwent four different operations in the first year of life for the correction of hare-lip and eleft-palate. The net results of these operations are, loss of tissue, scarring and unsightly deformity of the lip, scarring of the palate and loss of the premaxilla. This girl is ten years old, and is a sister of the boy shown in Figs. 4 to 7.

greatly facilitated. It is advisable to close the lip at this stage on account of the effect it has on the respiration and feeding, and also to comply with the wishes of the mother. It is my experience that the previous closure of the lip is of little consequence as far as its interference with the performance of the later operation on the palate is concerned. It will, of course, be readily understood that age is not the only factor upon which the time for operation is determined. The child must be in a fair state of health, that is to say, he must be taking his feedings well, gaining in weight, and the mouth and nose must be in a healthy condition.

The cleft in the palate is usually operated upon when the child is two years of age. In strong well-developed children it may be done



Fig. 4.—Unilateral complete hare-lip and cleftpalate. Note the flattened nostril and the lip drawn over the projecting edge of the premaxilla. The lip was operated upon when the boy was four months of age. The mother was told at that time that nothing could be done for the palate. He is now eight years old.

reaches the age of two years before operating are: the mortality for the operation is reduced; it will frequently be found that from the time the operation is performed on the alveolar process and lip until the child is two years of age, the cleft in the palate will have narrowed considerably, and that there will have been a marked growth of the tissues which are to form the muco-periosteal flap. Every physician and obstetrician should be sufficiently conversant with these factors upon which the time for the operation is determined, so that when he delivers a mother of a child with hare-lip and cleft-palate, he may be able to give her sound

advice regarding the steps that will be necessary to have the defect dealt with.

The third, and most important link, in the chain of poor results: the surgeon. I think it would not be far from the truth to say that there is no other operation performed by the average surgeon with such poor results. This

Fig. 5.—Same as Fig. 4, showing the defect in the alveolar process.

work is difficult and requires a thorough understanding of the structure, development, and function of the parts involved, as well as an appreciation of the principles of plastic surgery. Few surgeons seem willing to give the same study and preparation to this problem that they do to those in other fields of surgery, and are inclined to operate, more or less out of hand, on any such cases that may come to them. Moreover, in order to get even fair results, experience is necessary. I believe that even the best operators in this field will readily admit that their early attempts brought them no great cause for satisfaction.

Given the child with hare-lip and cleft-palate, who has been skillfully operated upon at the proper time, what can we say of the results? Dr. Ladd, of Boston, states that he obtains a satisfactory anatomical result in 88 per cent of

his cases. Ideal results, from a cosmetic point of view, are frequently impossible, yet, we can say that the worst cases can be improved to a state in which they are no longer unsightly, and not infrequently one can obtain a result so good that the defect will pass unnoticed by the casual observer. Of the closure of the cleft in the



Fig. 6.—Same boy after operation. The flattening of the nostril has been corrected. The parts of the upper jaw have been brought into alignment and bony union secured. The cleft in the palate has been closed. He will be sent to the orthodontist later to have treatment to improve the alignment of his teeth.

palate, it is not too much to expect to close nine out of ten at the first operation. The more operations that are required to close the palate, the poorer will be the functional results. As to the results, insofar as speech is concerned, I do not feel that I have had the opportunity of reexamining a sufficient number of cases that have undergone operation to make any authoritative statement. A mother may report that her child operated upon for cleft-palate speaks normally, but we know that mothers are prone to overlook defects in their offspring. However, from a limited experience, from the written statements from men of large experience in this field, and from personal talks with several of these latter,

I draw the following tentative conclusions: Cases operated upon before the child has learned to talk, in which a good anatomical result has been obtained, with a minimum amount of



Fig. 7.—Same boy showing appearance after operation. He should now have prolonged voice training to correct defects of speech which he has acquired by learning to talk with cleft palate.

scarring of the soft palate, will usually speak so well as to have their speech pass for normal with the average hearer. In cases where the palate has not been repaired until the child is four or five years of age or older, the results, insofar as speech is concerned, are disappointing. Could these patients have vocal training under the supervision of one trained in that work, all are agreed that results could be greatly improved.

SUMMARY

- 1. Cleft-palate is one of the most serious of congenital handicaps, not only because of the physical disability, but on account of the mental effect on the individual.
- 2. Many poor results can be attributed to patients not being operated upon at the proper time.
- 3. If surgeons devoted the same study and preparation to operations carried out for harelip and eleft-palate as they do to operations for the relief of other surgical conditions, present results, both cosmetic and functional, would be greatly improved.
- 4. Satisfactory anatomical results can be obtained in from 80 to 90 per cent of cases.
- 5. If the cleft in the palate is closed before the child has learned to talk, and a good anatomical result has been obtained with a minimum of scarring of the soft palate, the functional results, insofar as speech is concerned, are usually good.

SURGICAL COMPLICATIONS OF TYPHOID FEVER IN A CHILD*

BY CHAS. K. P. HENRY, M.D.

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THE typhoid epidemic in Montreal during the early part of 1927 showed a large proportion of cases amongst children, as was to be expected from a milk-borne infection. The following case was one of those occurring rather late in the epidemic.

On July 4, 1927, Elizabeth Meeks, aged four years, was admitted to the Montreal General Hospital with a diagnosis of intra-abdominal perforation, either appendicular or due to typhoidal ulceration, referred by Dr. W. Alexander.

The history of her illness began June 26th, nine days prior to admission, with symptoms referable to the gastro-intestinal tract and also to the right lower extremity. There was general malaise, with loss of appetite, headache, pain and marked tenderness in the right lower quadrant of the abdomen. There was pain in her hip, right thigh, and knee, and movement caused her to cry out. The condition on admission suggested an intra-abdominal lesion with some acute hip condition. The child had had acute abdominal pain five hours before admission, and examination revealed the following clinical picture. She had a typhoid look, flushed

^{*} Read at a regular meeting of the Montreal Medico-Chirurgical Society, December 2, 1927.

cheeks, pallor about the lips and eyes, a heavily coated tongue, fever of 103,° and a rapid pulse. There was incontinence of urine and fæces, and she was mildly delirious. The abdomen was moderately resistant all over, and rigid in the right lower quadrant. The leucocyte count was 29,800. There were no rose spots and the spleen could not be palpated. There was no loss of liver dullness, and no free fluid was made out in the abdomen. There was no history of intestinal hæmorrhage, and a stool passed on admission showed no blood.

The right lower extremity was flexed, the right hip seemed to be the seat of acute pain on movement, but no ædema or fixed point of bony tenderness was made out. Abduction was possible; full extension could not be carried out passively. The question of acute osteomyelitis of the upper femoral third was considered. There was definite swelling about the hip in the soft parts. There was no spinal tenderness or deformity, or increased lordosis. The femoral and iliac glands were enlarged on the right side. The rest of the physical examination was essentially negative.

The intra-abdominal condition had to be settled, and under general anæsthesia a Mc-Burney muscle-splitting operation was done. During the wash-up the hip joint was manipulated easily, there was no grating, and no instability, but the flexor muscle spasm was not abolished entirely. On opening the abdomen, there was no free fluid and the appendix was apparently normal. No typhoid ulcers were found in it at the pathological examination. In the terminal ileum was a thickened area to which the omentum was attached, and the glands in the mesentery were greatly enlarged. omental tag was divided, and this and the adjacent bowel wall were infolded by suture. No other typhoid ulcers could be palpated. The abdomen was closed without drainage, and the wound healed poorly. There was some surface infection of the skin-suture line, evidently from external infection, as the child had constant incontinence.

On admission, stools and urine were examined but were not positive for typhoid bacilli until three days later, nor was a positive Widal obtained until later, in any dilution. A blood culture was also negative for typhoid on admission.

After operation, her temperature continued high, 104,° and the hip condition was worse. X-rays did not show any changes in bone or joint, but the swelling was still present; and the local pain and tenderness and spasm warranted an exploratory osteotomy on July 9th, five days after admission. This was done by me through a lateral incision; the periosteum was not raised and a drill hole into the medulla gave no pus. The wound healed slowly without infection. At the same time I transfused her. (Fig. 1). She became more toxic, and on July



Fig. 1.—July 6. No bone or joint changes shown. Clips of abdominal wound above.

16th she was given by Dr. McKim 350 c.c. of blood from her father, with marked immediate and continued benefit. Her temperature was maintained at a lower level, and she showed the same general improvement that followed her first transfusion. In a few days the temperature was at a still lower level. About July 22nd, eighteen days after admission, the upper third of the thigh became greatly swollen, especially in the adductor region. This was very apparent, as the child had become very thin. Her fever increased, fluctuation appeared, and an abscess was found to be present. X-ray examination showed no bony changes, but there was a beginning displacement of the right hip-joint. (Fig. 2). On July 28th, for the third time I operated



Fig. 2.—July 26. A subluxation of the right hip is shown with very slight bone changes.

under gas-oxygen anæsthesia, and drained a large abscess. I could reach the antero-internal aspect of the hip-joint, could feel no bare bone nor any opening into the hip joint. The culture showed S. aureus. Extension was applied to the right lower extremity. She soon became afebrile, and on August 7th, about the thirty-third day of her disease, the stools and urine were negative for typhoid bacilli for the first time.

On August 9th, the x-rays showed an upward dislocation of the femur, the head resting on the edge of the acetabulum, but no bone destruction was made out. The abscess cavity quickly closed up, and there has been no breaking down of the wound. On August 26th, the x-ray showed a marked destructive condition of the hip, with an upward dislocation. (Fig. 3). On September

12th, a plaster spica was applied, as all her wounds were healed. The two incisions made for her transfusions did not heal well either. She was discharged on September 14th.



Fig. 3.—August 26. Dislocation of hip with marked destructive and productive bone changes.

The child was presented to the Society, well, fat, and walking with a slight limp, as she was still in a plaster cast of the right hip and thigh. (Fig. 4).



Fig. 4.—October 26. Fixation of femur with fusion of bony surfaces at hip-joint.

It is more than a coincidence that this child's mother was ill at the same time.

Mrs. W. sustained a cut on the flexor surface of her left index finger on July 3rd, (the day before our little patient was admitted to the ward). She dressed it, and on the following day was awakened by a severe chill about 2.30 a.m. She was chilly all day, and fever occurred at eventide, and during this night there was pain in the axilla. She developed pleuritic pain in her left chest, and was found to have a pleuritic

rub and local signs in the left axilla by Dr. W. W. Alexander, who also lanced her finger on July 7th, as an abscess had formed under and proximal to the cut mentioned above.

She was admitted to Dr. Archibald's service at the Royal Victoria Hospital on July 8th, where she was extremely ill, and her recovery was despaired of for some days. Further incisions were made in her finger and pus was evacuated. The epitrochlear, the axillary, and supra-clavicular glands were infected, and an axillary abscess was evacuated.

She ran a high fever, 104,° and her blood culture gave a growth of S. candicans. She was

given intravenous antistreptococcus serum on two oceasions, and was given a blood transfusion, and, in spite of septic uterine hæmorrhages which required packing, she recovered and was discharged on August 22nd.

The child showed no external wound by which the staphylococcus entered her system. Her joint symptoms were present before her mother was infected, and presumably she was in some way the source of the mother's infection, as the mother was her nurse until the child was sent to hospital.

Both had staphylococcus septicæmia, and both were fortunate enough to recover.

THE KIELLAND FORCEPS

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FOR centuries past the medical profession has endeavoured in various ways to lessen the travail of the parturient woman, and different instruments have been devised from time to time with this end in view. Albucasis, in the 11th century, made a crude instrument; the Chamberlains of the 16th century devised a forceps with only a cephalic curve. Later, about 1750, Smellie, in England, and Levret, in France, made longer forceps with both cephalic and pelvic curves; and finally in 1877 Tarnier's master-mind perfected the axis-traction forceps, the instrument now so well known and so widely used.

It remained, however, for Dr. Christian Kielland, of Oslo, Norway, to bring forth an instrument to overcome the disadvantages of the axis-traction forceps in high and incompletely rotated positions of the head, in which the blades of forceps previously devised were liable to grasp the head unevenly and severely injure the eye or brain.

Kielland first introduced his forceps before the Obstetrical Society of Munich in 1915 as an advance on the forceps in ordinary use, especially for the extraction of the head at the brim. At first, much was written for and against his invention, and the German and Austrian literature for long afforded evidence of this discussion; until now the advocates of Kielland have so demonstrated the advantages of the instrument, that in Germany, Austria, Czeckoslovakia and Hungary, it is hailed as the universal forceps, and its use taught at all the university clinics.

Kielland's forceps differ from other modern types in the following points:

- 1. The pelvic curve of the blades is much reduced and indeed scarcely exists. The forceps is bayonet shaped, resembling the old straight forceps; the blades however are inclined posteriorly from the shanks, but their long axis is parallel to that of the handles.
- 2. The cephalic curve is practically the same as in the older types. The greatest diameter of the blades, closed, is 8 cm., while the tips are separated only by 2.2 cm.
- 3. It has a free sliding lock by means of which the blades articulate; this is one of the characteristic features of the instrument, allowing the head to be grasped by the blades lying at different vertical levels.
- 4. The part between the blades and the handles—the shank—is narrow, which feature permits the blades to be turned in utero without injury either to the passage or the passenger.

- 5. There are two buttons, one on the anterior surface of each handle, designating to the operator in which direction rotation is to take place.
- The whole instrument is lighter and more slender in construction than any other forceps.

The advantages of Kielland's forceps may be thus summarized:—

- 1. Biparietal application to the baby's head, irrespective of the position of the head in the pelvis, causes the blades to grasp the head over a greater area, thus distributing the force of compression more over the cheeks and not over the orbit, nose, neck or occiput, and, besides, the instrument does not grasp with the tips, which is one danger of the axis-traction forceps.
- 2. Its use as an instrument of rotation as well as traction follows naturally upon the first advantage, together with the fact that the perfect fit of the forceps avoids slipping or re-application in any position, such as the rare persistent ocipito-posterior, or face-presentation with the chin in the sacral hollow.
- 3. The sliding lock permits a perfect use of the forceps, even when the posterior blade cannot be introduced so far as the anterior, for with the first rotation the symmetry of the blades is restored.
- 4. Less traction is necessary to effect delivery than with ordinary forceps, and so there is less danger to both mother and babe.
- 5. A thorough knowledge of the position of the head, the sagittal suture, and the anterior and posterior fontanelles, is a fundamental in the use of this forceps, and the exercise of this care will benefit our obstetrics.

The method of application to a high transverse position of the head is as follows:

- 1. Place the patient on her back in the lithotomy position under anæsthesia.
- Determine exactly the extent of descent of the head and the direction of the fontanelles.
- 3. Hold the forceps before the patient in the position you would have it occupy when applied; *i.e.*, with the two buttons towards the presenting part, which in this case is the occiput.
- 4. Remembering that the forceps is to be applied antero-posteriorly and not laterally, grasp the anterior blade with the left hand and discard for the meantime the posterior one.
- 5. Insert the index and middle fingers of the left hand into the vagina under the anterior

- lip of the cervix. Grasp, as you would a bayonet, the handle of the anterior blade in the right, holding it with the cephalic curve upwards, and guiding this blade still upwards until the fætal head is reached. Then go gently between the head and the anterior lip of the cervix up into the uterus, as long as no resistance is felt, until the shank rests on the posterior vaginal wall, when the fingers are withdrawn.
- 6. The blade is now gently rotated on its long axis towards the button, to permit the cephalic concave surface of the blade to come in intimate contact with the convexity of the head. Rotation is of necessity done gently, and when completed the lock lies on the perinæum where it rests without the aid of an assistant.
- 7. The posterior blade is also held like a bayonet in the right hand, and inserted under the control of two fingers of the left hand in front of the posterior lip of the cervix behind the head, in such a way as to permit locking of the forceps without recrossing them.
- 8. The forceps are now locked, and when this is done the blades are in the antero-posterior diameter, and the sagittal suture is perpendicular to the plane of the forceps.
- 9. Traction is now made in the direction of the handles, *i.e.*, more downwards than with any other forceps.
- 10. Rotation may take place spontaneously, but if not, the head is gently rotated in the widest part of the pelvis 90° from the transverse to the antero-posterior diameter. Traction and rotation should never be done simultaneously, and if one elevates the handles as in other types of forceps the tips of the blades will slip up to the temporal region, so that in effecting delivery traction is only to be made in the direction of the handles, following the path given by the changing posture of the infant head under the pubic bone.
- It is beyond the scope of this paper to do other than refer briefly to the various forms of treatment of persistent occipito-posterior positions:—
- 1. Forceps delivery in the posterior position is usually only advisable when the fœtal head is small and the vaginal outlet large.
 - 2. Internal podalic version is rarely advisable.

- 3. Cæsarian section may be advisable, and, if so, should be done early.
- 4. Manual rotation is more liable to cause infection, through the insertion of the whole hand, than the use of a smooth boiled steel blade, and, besides, the manually rotated head is liable to slip back before the forceps can be applied.
- 5. The Scanzoni method is a two-stage operation requiring much manual and instrumental application, with the danger of sepsis, extensive laceration of the mother, and injuries to the baby.
- 6. The use of the Kielland forceps I consider to be a vast improvement over the above mentioned methods.

Only a very small percentage of occipitoposterior presentations persist as such, but in these cases the obstetrician has to deal with one of the most trying conditions, where the best skill, ability, and judgment are none too good for a successful issue. The method of application in occipito-posterior position is as follows:

- 1. The forceps is held in front of the vulva, as before, as one would wish them applied to the head, *i.e.*, with the buttons, or the concave margins of the blades, towards the presenting part, which is in this case, again, the occiput, either left or right.
- 2. As the sagittal suture usually runs obliquely, and the large fontanelle is found under the pubes, either right or left, and the blades applied, as previously described, biparietally, the result is an upside down application as compared with the ordinary application for a transverse head.
- 3. Articulate the forceps, grasp the handles firmly and rotate about 90,° following which delivery is effected without re-applying, and without the uncalled for injuries of the Scanzoni manœuvre.

In face presentations the method is as follows:

The same technique is used, being careful to apply the blades with the buttons or the concave sides of the pelvic curvature directed towards the presenting part, usually the chin.

In breech presentations the Kielland forceps is easily applied directly to the breech, and rotation can be effected if necessary; in addition this instrument is very valuable for use on the aftercoming head.

The migratory, or travelling, method of application is used if one is uncertain about Kielland's original method, or in low forceps cases, and it is somewhat similar to the cephalic application of the classical forceps, except that the anterior blade of the Kielland is introduced first along the guiding fingers towards the anterior fontanelle and towards the lateral pelvic wall, and then travelling clockwise to the side of the baby's head and more anteriorly until the blade lies in front of the symphysis. The posterior blade is inserted directly posteriorly.

An intravenous injection of pituitrin is given by an assistant in all cases in the *Frauenklinik* in Vienna by Werner, Heidler, and Graff, with whom I had the pleasure of working, as soon as the forceps is applied, and an episiotomy is performed in those cases in which one is afraid of an extensive laceration, especially in primiparæ.

The only place where other forceps are indicated is perhaps the rare low Cæsarian section case, in which a forceps with a locked blade is better, as there is no bony pelvis to hold the blades in place.

I am fully convinced of the value of Kielland's forceps in any case where the use of forceps is indicated, but of course it is not a cure-all, and its use on a high-floating head, or in a markedly contracted pelvis, may needlessly endanger, or sacrifice, the lives of mother and child, may indelibly mar the one asset of the obstetrician, his reputation, and bring into disrepute an instrument, which, if used with discretion, is a valuable adjunct to our armamentarium.

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SURGICAL TUBERCULOSIS IN CHILDREN

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INTRODUCTION

THE fact that tuberculosis of bone or joint is merely a local manifestation of a general disease is not widely appreciated. Throughout the country the surgeon is treating, for instance, tuberculosis of the hip, without realizing that probably there are other active foci of this infection in the patient under his care. The accepted hæmatogenous theory of the pathogenesis of bone- or joint-tuberculosis obviously establishes the fact enunciated above. It is believed that the tubercle bacillus enters the joint from the blood-stream. Then, it may be asked, how does it get into the circulation? The work of Ghon and others leads one to believe beyond reasonable doubt that an adenitis, usually mediastinal, arising from a primary focus such as a tuberculous tonsil or lung, is the responsible factor. If, then, tuberculosis is a generalized disease, this conviction should be capable of proof before it can be accepted. The work reported in this paper is a fairly thorough study of the patients suffering from tuberculosis on the surgical service of the Hospital for Sick Children, Toronto, during the course of one year, and substantiates, to a great degree, this statement.

EXTENT AND METHOD OF INVESTIGATION

The patients studied were not selected. The series, not a large one as series go these days, . consists of all patients who were present in hospital between the dates July 1, 1926, and July 1, 1927. The scrutiny was not complete in many cases, but the general plan adopted was as follows :-

Skin tests were done on all patients. catheter specimen of urine and a laryngeal swab

were obtained from each, and the material inoculated into guinea-pigs. This procedure was repeated each time the report on the previous examination returned from the laboratory. Stereo-radiographs were obtained from time to time of all chests, in addition to the radiographs of the local lesion, and these were reported by the chief of the radiological service. The chief of the chest service, and a member of the ear, nose and throat service, each saw the majority of the patients. The former made periodic reports on the intra-thoracic condition, whilst the latter carried out a routine tonsillectomy where there were still tonsils present. The tonsils were carefully saved, sectioned and then ground and the material inoculated into guinea-pigs.

DIFFICULTIES

There are many difficulties in the way of a consistent and complete study of all patients after the manner outlined. Some of these may be briefly indicated. First, there is the supervention of that bane of children's hospitalsinfectious disease. That at once removes the patient from observation for a varying period. Then one has to cope with the ignorance of many foreign-born (and indeed some nativeborn) parents, and frequently the child is removed. Again, some few of the patients were private, and the period of hospitalization was curtailed to a minimum. An unfortunate and unavoidable epidemic among the guinea-pigs, lasting some two months, disrupted the course of the research and set at nought a good deal of work. Finally, there is the personal factor of the house-surgeon on the ward. Some were more interested in the work than others and varying degrees of co-operation are to be met with.

contact)

100

CONDITIONS MODIFYING RESULTS

Many of the patients included in the list are those who have been under treatment for some time, a year or more, some of these being old patients who return annually to be admitted to the Lakeside branch of the hospital to spend the summer in the open air, where they may at once derive the benefit of a kindly and efficient sun and nursing service. In these children, foci other than that which is obvious have probably healed, and this must modify the findings. However, the appended results are surprisingly suggestive.

DISTRIBUTION OF MAIN LESION

The number of cases in the series was slightly higher than one hundred. The odd few at the end were disregarded, that the round figure might convey the inferences more concisely. Classified under "Main Lesion", that is to say, the reason for reporting for treatment, these may be indicated as follows:-

TABLE I

| CLASSIFICATION OF MAIN LESION |
|---|
| Tuberculosis of glands (cervical and pre-auricular) |
| Tuberculosis of hip |
| Pott's Disease (all levels) |
| Tuberculosis of knee |
| Multiple tuberculous foci (clinically obvious) |
| Tuberculous peritonitis |
| Tuberculous cystitis |
| Tuberculosis of ankle |
| Tuberculosis of ilium |
| Sacroiliac tuberculosis |
| |
| |

PROOF OF LESION

Hibbs,* in a recent address, has raised the question of the proof of the pathological condition in connection with tuberculosis of joints. In this series, the ensuing table indicates the confirmation of tuberculosis with varying degrees of dependability. The proofs are arranged in order of merit.

TABLE II

| PATHOLOGICAL PROOFS | |
|--|-----|
| Ca | ses |
| By guinea-pig inoculation or section of tissue from | |
| site of main lesion | 53 |
| Other foci, proved by guinea-pig inculation | 4 |
| Positive x-ray of main lesion, positive skin-tests, | |
| including 10 positive chest stereos | 24 |
| Positive chest stereos, positive skin tests, (all | |
| cervical adenitis) | 3 |
| Positive skin tests, clinically unquestionable; no | - |
| further reports available | 2 |
| Clinically definite; not investigated for various | - |
| reasons (infectious ward, removed, or semi- | |
| private, etc.) | 5 |
| Clinically definite: positive skin tests (One contact) | 4 |

| TABLE II—Continued | |
|---|-------|
| PATHOLOGICAL PROOFS | Cases |
| Clinically definite: positive skin tests. (Awaiting reports of further investigation) | 1 |
| Clinically definite: no skin tests done (Definite | 1 |

Of the one hundred cases, sixty-three were submitted to one or more complete investigations. The following tables give detailed results of these.

No direct evidence: negative skin tests. (Probably not tuberculosis).

TABULATION OF RESULTS OF INVESTIGATION

TABLE III

SKIN TESTS

| (All | intract | itaneo | us | 1/4 | 100 | ol | d | tul | er | cu | li | n) | | |
|-------------|----------|--------|------|-----|-----|----|---|-----|----|----|----|----|----|-----|
| , | | | | | | | | | | | | | Ca | ses |
| Human and | l bovine | ; posi | tive | 9 | | | | | | | | | | 85 |
| Human alo | ne; pos | itive | | | | | | | | | | | | 1 |
| Bovine alon | e; posit | tive . | | | | | | | | | | | | 1 |
| Negative | | | | | | | | | | | | | | 5 |
| Not done | | | | | | | | | | | | | | 8 |
| | | | | | | | | | | | | | - | _ |
| | | | | | | | | | | | | | 1 | 100 |

TABLE IV

| PATIENTS | FROM WHOM CATHETER URINE SPECIMENS WERE INOCULATED INTO GUINEA-PIGS |
|----------|---|
| | Case |
| Negative | |
| Positive | (11.8 per cent) 8 |
| | |
| | 74 |

TABLE V

| PATIENTS | FROM | WHOM | LARYNGEAL | SWABS | WERE |
|----------|-------|--------|-------------|-------|------|
| т | NOOTH | ATED D | UTO CHINEA. | PIGS | |

| Negative | | | | | | | | ۰ | | ٠ | | | ٠ | ٠ | | ۰ | ٠ | ٠ | | | ۰ | | | | | | | | | | | | | - | - | | 5 | - |
|-----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|---|---|---|---|---|----|----|----|----|---|---|---|---|
| Positive | 0 | | | | | 0 | 0 | | | | ۰ | | | | | | 0 | | 9 | | | (| 1 | 11 | l. | 1 | P | е | r | , | c€ | er | ıt | () |) | | | 6 |
| No report | t | 0 | ۰ | 0 | 0 | | 0 | 0 | 0 | 0 | ۰ | 0 | ۰ | ۰ | ۰ | 0 | | 0 | 0 | 0 | | | | | | | 0 | | | | | | | 0 | | | | 3 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | - | - | - |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6 | 2 |

TABLE VI

CHEST STEREORADIOGRAPHS

| Doubtful | |
|-----------|--|
| | |
| Negative | |
| No report | |

(Note.-The results of the examinations of the chest service parallel the radiological reports.)

TABLE VII

TONSILS REMOVED, SECTIONED AND GROUND MATERIAL INOCULATED INTO GUINEA-PIGS

| | | | | C | ases |
|--------------------------|---|---------|-----|-------|------|
| Negative | | | | | 21 |
| Positive—cervical glands | 5 | | | | |
| hip | 1 | | | | |
| multiple foci | 1 | (28 | per | cent) | 7 |
| | | | | | |
| | | | | | 28 |

REMARKS

In the foregoing series one particularly curious case was encountered. This was one of clinically definite tuberculous adenitis in whom the skin tests were repeatedly negative. However, the glands on removal were found positive by the pathologist. A certain percentage of the patients in the series developed secondary infections. These, as has been observed many times, do very badly. There was no particular significance in the ages of the patients reported on. They ranged from five months to fourteen years, while males and females were about equally divided. At this juncture it may be intimated that the question of renal tuberculosis in these patients will be dealt with in another paper by Dr. R. I. Harris of the Surgical Staff, while Dr. I. H. Erb, the Director of the Department of Pathology, intends to reports on the association of tuberculous tonsils and tuberculous cervical adenitis.

SUMMARY

Here, then, are one hundred unselected cases suffering from tuberculosis in one or other of its local manifestations, which on thorough investigation prove to have demonstrable lesions in localities other than the one which concerned all interested persons at the time of admission. The series suggests the reliability of the intracutaneous tuberculin tests. In this connexion, too, Ghon justifies the dependence placed on this reaction as an extremely reliable aid in making a diagnosis of tuberculosis in children. Tubercle bacilli were recovered from the urine in approximately 11.8 per cent of cases. They were shown to be present in the upper respiratory tract in approximately 11.1 per cent of cases. Routine chest examinations revealed the surprising fact that two-thirds of the cases investigated showed lung foci, while one may almost assume that tuberculous tonsils are concomitant with tuberculous cervical glands.

DISCUSSION

The discussion of the results of this study will be waived. It permits of only one general inference, the thesis previously enunciated, that tuberculosis of a joint or gland, or Pott's disease, does not exist per se, but is a manifestation of a general disease. As to why the tubercle bacillus exhibits its greatest activity in one selected region of the human organism this paper is not concerned. For the time being the theory of an inciting trauma will suffice. Neither will the situation of the primary focus be considered. For enlightenment in this direction Anton Ghon's work is recommended.

TREATMENT

Treatment may be dismissed with a word. In bone- and joint-tuberculosis the conservative measures of immobilization of the affected part, together with general rest, plenty of good food, fresh air, and heliotherapy have been the rule. Glands are treated both by excision and radiotherapy, with a tendency at the moment towards the latter method of treatment. As a result of the statements made by Dr. Russell Hibbs* on a recent visit to Toronto, more radical methods in the treatment of joint-tuberculosis, especially those of surgical arthrodesis, promise to gain ascendency. They remain however to be proved.

CONCLUSION

In conclusion appreciative thanks are due to the various departments whose members entered so thoroughly and whole-heartedly into the pursuit of this investigation, and to the surgical staff, particularly to Dr. R. I. Harris, for their ever present help and encouragement.

Lead Tetra-Ethyl.—This is a compound in which lead takes the place of the central carbon atom in tetra-ethyl methane. Its formula is Pb (C₂H₅)₄. It is mixed with gasoline for the purpose of reducing the speed of ignition, and, therefore, lessening the tendency to "knock." The substance itself is very poisonous, and many cases of poisoning have already occurred among those handling it.

As sold, the "ethyl gas," as it is called in this country, is said to contain only 0.07 per cent of the tetra-ethyl. This mixture, therefore, is not likely to be so poisonous as the pure compound. Yet, it should be used with caution, as it may cause absorption of lead through the skin, or more easily, through the lungs.

Those using this new form of "gas" should be on their guard, so as to avoid serious trouble, and medical men should be on the look-out for an occasional case of lead-poisoning due to this cause.—A. G. N.

^{*} Hibbs.—Quoted from a lecture to the surgical section of the Canadian Medical Association, Toronto, June, 1927.

DENTAL ANÆSTHESIA*

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IN introducing the subject of dental anæsthesia a word might be said in regard to its history. In 1828, Henry Hill Hickman, a young English surgeon, attempted to bring before the profession a means of destroying consciousness, using carbonic acid gas and nitrous oxide. His attempts failed however, owing to the scepticism with which they were received, and he died at the early age of 29, leaving the honour of the discovery of the value of nitrous oxide as an anæsthetic to Horace Wells, an American dentist, who in 1844 gave a demonstration to medical men of its effects by administering the gas to a patient. Owing to the want of exact knowledge in regard to its use, and also to poor apparatus, the experiment failed. It is much to be regretted that the medical world was so very critical, for had Wells been given another chance, he might have gone far in bringing this anæsthetic to the fore. The discouragement was more than he could bear, and Wells committed suicide shortly afterwards by opening a vein while in his bath. Nitrous oxide was left severely alone for a time, and it was not until 1862 that it became used extensively. As to the discovery of ether in 1846, I think Morton, a dentist and medical student, deserves most eredit, although Jackson, a chemist and physician, undoubtedly should have a share. Four years previously, Crawford Long had used ether in operations, but failed to publish any papers on the subject until after Morton and Jackson had claimed the glory of being the discoverers.

Before going into detail about the use of nitrous oxide for dental work, I would like to speak briefly of ether and some of the other anæsthetics. In England ether is preferred where there are a large number of teeth to be extracted. For the dental office, it is undesirable because of its prolonged after effects. The same is true also of chloroform.

Ethylene has been used by some, but its chief danger is its explosive tendency. It is

said to cause more nausea and more bleeding. It also has a very permeating disagreeable odour. I have had no experience with it.

Ethyl chloride should only be used by the experienced anæsthetist, and should always be given with air, without which it is extremely dangerous. This may be done by keeping the mask lifted slightly from the face while spraying the liquid on the mask. It gives a short period of anæsthesia, and will prove efficient where one or two teeth are to be removed.

Local anæsthesia has a very important place in dental surgery. There are two methods that may be employed: infiltration, which is used most extensively, and nerve-blocking, which may prove ideal in some cases. Healing, however, is slower with infiltration, and there is also more pain. I agree with Dr. Hopkins, of Toronto, when he states that the patient should have something to say in the choice of anæsthetics. Of course, the patient does not always know which is best for him, and in this case, objections, if any, must be firmly overruled.

Nitrous oxide acts as an anæsthetic by replacing the oxygen in the tissues. The brain cells use more oxygen than any others in the body, hence they are deadened or depressed faster than the others by the excess of nitrogen which they take up. In a paper by Harms² the fact that nitrous oxide raises blood-pressure is dealt with, but he brings forward the point that other anæsthetics also raise blood-pressure, so it is not a fault of this gas alone.

An interesting questionnaire was sent out by McKesson,³ of Toledo, to a number of dentists. The majority of those who answered preferred to use nitrous oxide where there were many teeth to be extracted. Of the 130 who reported 80 per cent used nitrous oxide in 75 per cent of all their operative work, and 18 per cent, used it exclusively. Of the 130 operators 58 were able to handle all patients under nitrous oxide. In eases of arthritis, anæmia, heart disease, nephritis, diabetes, and goitre the majority of dentists preferred to use nitrous oxide. In

^{*} Read before the Section of Anæsthesia. Academy of Medicine, Toronto, Oct. 20, 1927.

hospital practice it has also been found the best anæsthetic for these handicapped patients.

Divided operations are necessary in some cases. McKesson states, "Extraction is the logical means to drain an abscess but not the ideal time to remove all the teeth. To remove one tonsil and leave the other is considered malpractice, but to remove a tonsil with an abscess is also malpractice."

Death from shock after a dental operation is almost an unheard-of thing. The death-rate with nitrous oxide is about 1 in 12,000, obviously a very low one. McKesson says, and correctly, "It is safer than a joy ride." Most of the deaths reported occurred some time after the anæsthetic had been discontinued, and could be traced to causes not directly connected with it.

Premedication may be found of value when using nitrous oxide in very nervous patients. In hospital clinics and in the dental office, it is not used extensively; however, a note about it will not be out of place. One-quarter of a grain of morphine given hypodermically, one hour previous to the extraction, has been found of great advantage in cases where there is a history that the patient takes an anæsthetic badly. Another interesting paper by Harms⁴ says that nausea occurs in 4 per cent of patients after short anæsthesia, and that the percentage increases for anæsthesia of longer duration, no matter how long the patient goes without eating. The buffer mechanism maintains a Ph. of 7.3 or 7.4 and the alkaline reserve is depleted after anæsthesia. To prevent this, Harms advises the use of 200 grammes of orange juice the night before and on the morning of the operation. The acids of the juice are oxidized in the body, and form carbonates. The only objection is that it may cause vomiting if taken less than an hour before. He also claims that the patients are less resistant and remain a better colour.

And now as to the administration of nitrous oxide gas. All patients in our clinic have a physical examination before they are sent to us, so that if there are any organic defects we are fully aware of it before we start. Excitement is quite capable of sending the pulse to 120, but Edgar Paul⁵ advises that the patient should lie down if he or she has an irregular or a very slow pulse. He also advises giving

the anæsthetic slowly and avoiding hyperanæsthesia. It is safe to administer the gas to a pregnant woman up to the seventh month for dental work, when done carefully. Children require more oxygen than adults, for they react faster to the gas.

The environment should be as quiet and peaceful as possible for the best results, and the anæsthetist should try and instil in his patient a feeling that all will be well. Remove or loosen any tight clothing that might interfere with respiration, and have the patient sit in the chair as comfortably as possible. We usually strap the patient in, for it is not a pleasant experience to have the patient get away from you.

The rubber mouthpiece is placed between the teeth and the patient is instructed to bite on it. This is to prevent difficulty in opening the mouth, for in some cases relaxation may not be as complete as in others. The nose piece is placed in position with the air-outlet open, preventing a feeling of suffocation. The mouthtube is then fitted over the mouth and the nitrous oxide and oxygen are turned on, and the air-valve closed. Instruct the patient to breathe naturally, and be sure that the face pieces fit closely. I usually give 10-15 per cent oxygen with the nitrous oxide for one minute and then stop the oxygen for thirty seconds. At the end of this time the patient is usually ready for operation. Of course, the time varies with different patients. I have had them ready for operation at the end of the first minute, and I have also found them take two and three minutes. It is always advisable, I think, to have ether in the machine in case the patient proves to be specially resistant. When the oxygen has been shut off for about thirty seconds it should be turned on again, giving a sufficient amount to keep the patient a good colour. He should get about three gallons per The mouth-piece is removed when minute. ready, the valve turned to the nose-piece, and the throat packed. This packing serves a double purpose: it prevents foreign material from getting into the lungs, and also prevents the patient from getting air. Romberger6 advises the use of a large pad of cotton, placed over the mouth and pushed up and in. The pad takes a rotating movement and rolls on to the back of the tongue. He has found this a very efficient way of packing. In the clinic we have been using ordinary gauze packs, which are very good when they happen to be of the same size as the patient's mouth. If resistance is marked, the anæsthetic should be forced, and if respiration is sluggish the re-breathing valve can be used. When the dentist is finished, give a few breaths of oxygen to bring the patient around more quickly. At the hospital we usually keep them for a short time before allowing them to go out.

As in the case of other anæsthetics, there are four stages of anæsthesia: (1) Analgesia; (2) Excitement; (3) Surgical anæsthesia; (4) Danger. Edgar Paul gives a complete table of signs and symptoms. I find that colour and respiration are the two most helpful. sign alone is perhaps of no value. The absence of the corneal reflex is the main signal that surgical anæsthesia has been reached. The eye is usually immobile, respiration deep and regular with a tendency to snoring, and the colour is good. Danger signals are not hard to recognize-blue cyanotic colour, irregular respiration, protruding eyeballs with dilated pupils-truly an alarming picture. One should always be ready for them. The first requisite is to increase the oxygen, and remove the nitrous oxide. Then remove any obstruction

that may be in the throat, draw the mandible forward, and begin artificial respiration.

The secret of a perfect administration of an anæsthetic is to anticipate the patient's need. This takes close watching and experi-

SUMMARY

Briefly, the anæsthetics that may be used are:

- 1. Ether and chloroform—undesirable because of prolonged after effects.
- 2. Ethyl chloride-may be used for short operations and must be given with air.
- 3. Ethylene—the possibility of explosion must be remembered.
- 4. Infiltration and blocking-very useful in some cases—but there is danger of overdosage where many teeth have to be removed.
- 5. Nitrous oxide—ideal for multiple extractions and for handicapped patients. It is often thought by some to be the least dangerous of anæsthetics. This is entirely wrong: it is dangerous in the hands of the inexperienced.

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Rickets.—Such factors as heredity, lack of exercise, cow's and human milk containing diets, and vitamins, Henry J. Gerstenberger, Cleveland, says all play merely secondarily etiologic rôles to the primary and fundamental cause of rickets, namely, inadequate exposure to the actinic rays or their equivalent of growing human infants. The amount of exposure or the amount of antirachitic factor in the form of cod liver oil necessary to prevent rickets seems to bear a direct relationship to the rate of growth In other words, as the rate of growth usually is greater the younger the infant, his antirachitic factor requirement likewise is greater, and paradoxical as is may seem to be, the younger the infant the greater, for instance, is the amount of cod liver oil necessary to insure freedom from rickets. The actual maximum amount of cod liver oil required is not more than 1 c.c., provided, of course, it is begun before the rickets develops. Therefore, in order to prevent rickets, the administration of cod liver oil or the exposure of the child to the actinic rays should be

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begun early, not later than the beginning of the second week of life. The great primary importance of the actinic rays to normal growth is evidenced by the fact that rickets occurs most severely and most frequently at the end of winter, and especially in those infants whose skins are pigmented. In preventing rickets in premature infants it seems necessary, in addition to giving an adequate supply of the antirachitic factor, to increase their protein and mineral intake, even when they are getting human milk as a diet. If rickets has developed and if it is continuously and adequately treated with the antirachitic factor, likewise spasmophilia or tetany will not appear. However, if the treatment is interrupted the spasmophilic picture will appear and sooner or later will give evidence in the roentgenogram of some healing having taken place, and in the blood serum of a change from the figures characteristic of a low phosphorus rickets to those of what unfortunately has been called a "low calcium rickets."—J. Am. M. Ass., 1927,

Case Reports

REPORT OF A CASE OF PRIMARY CARCINOMA OF THE LUNG

BY C. W. MACMILLAN, M.D.

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The following report is not presented because of the rarity of primary carcinoma of the lung, but because of the peculiar distribution of the secondary glandular involvement. The history and superficial examination would lead one to make a diagnosis of Hodgkin's disease, but the final x-ray appearance of the thorax, after the removal of fluid, gave one the proper clue.

Present History.—The patient, aged 26, female, Acadian, was admitted to the Jordan Memorial Sanatorium for diagnosis, on September, 1926, complaining of increasing shortness of breath, enlarged glands in the neck, cough and loss of weight. She was apparently well until the summer of 1924, when she developed a slight unproductive cough, gradual increasing fatigue, dyspnæa, and loss of strength. She also noticed a few enlarged glands in the left axilla, which caused a little discomfort but no pain. Four months later the glands in the left anterior .triangle of the neck became enlarged, but were not painful. During the fall of 1924 her cough disappeared, but in the following winter the cervical glands became larger. This was accompanied by a swelling of the inner side of the left upper arm and enlargement of the left inguinal glands. The swelling of the arm persisted for four months and then subsided. During the remainder of 1925 she felt miserable, with an aggravation of the above symptoms.

In January, 1926, the cough became more constant, and was associated with three ounces of white sputum daily, a severe pain in the upper part of the left thorax, and an increased shortness of breath. She felt hot and flushed, was beginning to lose weight, and was confined to her bed for a few weeks. During the spring her cough and sputum decreased, she had night sweats on a few occasions, and the glands in left posterior cervical triangle began to enlarge.

During the summer her condition became worse. She lost 18 lbs., was unable to work, and was confined to bed more and more.

Past History.—The family history contained nothing of importance. The patient had had the ordinary diseases of childhood, and lumbago in 1924. Her appetite was variable and was associated with antipathy to fatty foods; bowels and menses were regular. She had had dry and scaly skin for about three years.

Physical Examination.—The patient was tall, thin, pale, of dark complexion, and appeared quite ill.

The chest was long, narrow, and thin, with marked curvature of the spine to the right. The clavicles, ribs, and scapulæ were prominent, associated with an atrophy of all of the muscles of the shoulder girdle. There was limited movement of the left side, with some bulging of the intercostal spaces. No venous network was visible.

Right Lung.—There was impaired resonance at the apex, associated with broncho-vesicular breathing to the third rib. The breath sounds were harsh below third rib; on coughing, there were a few fine râles over the first rib in front.

Left Lung.—There was absolute dulness from apex to base, back and front; the breath sounds were distant to the second rib, and absent below this; vocal fremitus was diminished, and D'Espine's sign was negative.

Cardio Vascular. — Percussion revealed the right cardiac border two inches to the right of the costal margin; the left and upper borders no differential note could be obtained. Blood pressure, systolic 98; dystolic 70; pulse, 94.

Abdomen. — Soft; no palpable masses. A barium meal demonstrated no irregularities in the gastro-intestinal tract. The liver and spleen were not enlarged.

Skin.—Dry and scaly.

Neuro-muscular System. — Her strength was poor; the cutaneous sensations, reflexes, cranial nerves, and gait were normal.

Glandular System.—In the anterior angle on the left side there were about a dozen enlarged glands; two, the size of a large walnut, at the angle of the jaw; the others of varying sizes down to that of a bean. They were rubbery, discrete, fairly moveable, and painless. The posterior angle contained about the same number, the size of a pea, with the same characteristics as those in anterior angle. In the left axilla three glands could be palpated; one the size of a cherry; the other two, the size of beans. There were three glands, the size of a bean, in the left inguinal region.

Laboratory Work.—Sputum, negative for acid-fast bacilli; urine, nothing pathological; blood, hæmoglobin 80 per cent; red blood corpuscles, 5.600,000; white blood corpuscles, 10,600; polymorphonuclears, 75 per cent; lymphocytes, 18 per cent; eosinophiles, 2 per cent; basophiles, 1.

On September 22nd, 26 ounces of clear straw-coloured fluid were withdrawn from the chest. Examination showed much fibrin and albumin. The following day 21 ounces were removed; on October 2nd, 29 ounces, and on October 15th, 52 ounces were removed. Aspiration had no effect on either pulse or temperature, which ranged between 76 to 120 and 98° to 101.4° respectively. Dyspnæa was relieved, and the patient felt better, but relapsed in a few days.

X-Ray and Fluoroscopy.—Before removal of the fluid; all details were obliterated on the left side of the thorax by a ground-glass shadow. Right side; the only abnormality was a definite cloudy area, extending along the side of the main ascending bronchus, breaking up at the end into smaller localized areas in the parenchyma of the lung. Each individual bud seemingly followed some branch of the bronchus.

After fluid removal. Although no fluid level existed before, there was now a partial spontaneous pneumothorax with fluid level. A homogeneous cloud extended from the roots and involved the entire upper left lobe. The edges were well delineated and regular. The pleura was studded with rounded, even-edged areas, the size of a twenty-five cent piece.

The patient was again x-rayed, and showed a small amount of fluid remaining at the base. A gland was removed from the right anterior triangle, and the diagnosis returned was adenocarcinoma. After thirty days the patient was discharged as a hopeless case.

RUPTURE OF THE CORACO-CLAVICULAR LIGAMENTS

BY ARTHUR W. Hogg, M.D.

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This case is reported because of the rarity of rupture of the ligaments which attach the clavicle to the coracoid process. Indeed, it is usually considered that the clavicle is more likely to fracture on either side of these ligaments. The older textbooks mention the possibility of such a condition, and the *British Medical Journal* in 1904 reported a case with probable rupture of these ligaments.

On August 19th, 1927, a youth, 18 years old, was hit by an automobile. On examination at the hospital it was found that he was suffering from concussion of the brain, a scalp wound, and what appeared to be a damaged right shoulder-joint.

Closer examination showed the right clavicle to be intact but that the acromio-clavicular ligaments, and also the coraco-clavicular ligaments, had given way. The lateral extremity of the right clavicle was displaced backward and could be felt over the middle of the spine of the right scapula. These findings were confirmed by x-ray.

It was easy to replace the lateral end of the clavicle in approximately its normal position, but it was impossible to hold it in place, and open fixation was deemed necessary.

After waiting one week for the brain injury to subside, the ruptured ligaments were exposed, using local anæsthesia. An epaulet incision was made so that the scar would not be over any pressure points of the shoulder. The superior acromio-clavicular ligament and the coraco-clavicular ligaments were replaced by chromic catgut and kangaroo tendon.

The patient was kept recumbent for ten days without a pillow. He did well, starting work two months from the date of the accident.

After four months he still wears a pad over the lateral end of the clavicle. This pad is merely to remind the patient to go slowly with the shoulder, and will soon be discontinued.

Functionally, the result is good, the patient having full use of the right shoulder. Examination shows a slight elevation of the lateral extremity of the right clavicle.

Reviews and Retrospects

SOME HISTORICAL ASPECTS OF PERNICIOUS ANÆMIA

By Heber C. Jamieson, M.B.

Edmonton

The first case of this disease which can be definitely recognized from the literature was called idiopathic anamia by Combe in 1823.1 He reported "a well-marked instance of a very peculiar disease which has been altogether overlooked by any English author with whose writings I am acquainted. Unfortunately, however, such is the allowable diversity of opinion on most medical subjects, that it is very possible the following case (disease) may be viewed in different lights, and receive different appellations; and while some may be disposed to regard this anæmia as constituting a morbid state sui generis, others may consider the defect in red circulatory mass (so extreme that every organ in the body, with the exception of the spleen, was deprived of its red blood) as an accidental and occasional circumstance denoting some peculiar change in the assimilative powers, the primary stages of which we have been unable to detect. Doubtful myself which of the two opinions may be the more correct, I shall do little more than state correctly the phenomena of the case, and minutely the appearances presented on dissection. One remark only I may at present offer-that if any train of symptoms may be allowed to constitute anæmia a generic disease, the following may be considered an example of it in its most idiopathic form."

The details of the case were as follows:-

The patient was a man, act. 47, healthy and well-nourished, who "had never been blooded." In July, 1821, he complained of weakness and dyspnæa on exertion, but for two or three months before, his complexion had become pale. He was then seen by Dr. Combe, who describes him as "exactly resembling a person just recovering from an attack of syncope. The face, lips, and whole surface were of a deadly pale colour, the albugine of the eye bluish." Pulse 80. Bowels irregular; thirst and anorexia. Urine, pale and copious, with scarcely any sediment. Feet and eyes In September he tried a sea voyage and drank chalybeate water, but returned home in October with loss of flesh and anasarca, the anæmia continuing as profound as before. In January, 1822, he died with all the symptoms of hydrothorax, having passed the last twenty-four hours of his life in a state of lethargy. A post mortem examination was made by Dr. Combe and Dr. Kellie, who add a few particulars in the course of another paper in the same volume, (p. 119). The body was nearly the same colour as it was during life; no hypostasis; little rigor. All the organs were healthy, though excessively bloodless. There was ædema of the pia mater, and serum in the pleura and peri-The heart was pale, "like flesh macerated cardium.

many days in water." No mention was made of tabby mottling of muscle, nor were any ecchymoses noted. The spleen was soft, the kidneys bloodless, the great vessels empty (Pye-Smith).

It was while investigating anemia that Addison³ observed the facts which led to his discovery of the condition that now bears his name. This was in 1855. The masterly description of the disease at once gave it a definite status in the catalogue of morbid conditions in the Englishspeaking world; and this without a microscopic examination of the blood.

In the introduction to his treatise, "On the Constitutional and Local Effects of Disease of the Supra-renal Capsules," is the following

account :-

"As a preface to my subject, it may not be altogether without interest or unprofitable to give a brief narrative of the circumstances and observations by which

I have been led to my present convictions.

"For a long period I had from time to time met with a very remarkable form of general anamia occurring without any discoverable cause whatever, cases in which there had been no previous loss of blood, no exhausting diarrhea, no chlorosis, no purpura, no renal, splenic, miasmatic, glandular, strumous, or malignant

"Accordingly, in speaking of this form in clinical lectures I, perhaps with little propriety, applied to it the term 'idiopathic,' to distinguish it from cases in which there existed more or less evidence of some of the usual causes or concomitants of the anæmic state.

"The disease presented in every instance the same general character, pursued a similar course, and, with scarcely a single exception, was followed after a variable

period by the same result.

"It occurs in both sexes; generally, but not ex-clusively, beyond the middle period of life; and, so far as I at present know, chiefly in persons of a some-what large and bulky frame, and with a strongly marked

tendency to the formation of fat.

"It makes its approach in so slow and insidious a manner that the patient can hardly fix a date to his earliest feeling of that languor which is shortly to become so extreme. The countenance gets pale, the whites of the eyes become pearly, the general frame flabby rather than wasted; the pulse perhaps large, but remarkably soft and compressible, and occasionally with a slight jerk, especially under the slightest excitement. There is an increasing indisposition to exertion, with an uncomfortable feeling of faintness or breathlessness on attempting it; the heart is readily made to palpitate; attempting it; the heart is readily made to palpitate; the whole surface of the body presents a blanched, smooth, and waxy appearance; the lips, gums, and tongue seem bloodless; the flabbiness of the solids increases; the appetite fails; the extreme languor and faintness supervene, breathlessness and palpitations being produced by the most trifling exertion or emotion; some slight ædema is probably perceived about the The debility becomes extreme; the patient can no longer rise from his bed; the mind occasionally wanders; he falls into a prostrate and half-torpid state, and at length expires. Nevertheless, to the very last, and after a sickness of perhaps several months' duration, the bulkiness of the general frame and the obesity often present a most striking contrast to the failure and exhaustion observable in every other respect.

"With perhaps a single exception, the disease, in my own experience, resisted all remedial efforts, and

sooner or later terminated fatally.

"On examining the bodies of such patients after death I have failed to discover any organic lesion that could properly or reasonably be assigned as an adequate cause of such serious consequences; nevertheless, from the disease having uniformly occurred in fat people, I was naturally led to entertain a suspicion that some form of fatty degeneration might have a share at least in its production; and I may observe that, in the case last examined, the heart had undergone such a change, and that a portion of the semilunar ganglion and solar plexus, on being subjected to microscopic examination, was pronounced by Mr. Quekett to have passed into a was pronounced by an ecorresponding condition.

"Whether any or all of these morbid changes are believe they are—in giving

essentially concerned-as I believe they are-in giving rise to this very remarkable disease, future observations

will probably decide.
"The cases having occurred prior to the publication of Dr. Bennet's interesting essay on "Leuocythamia," it was not determined by microscopic examination whether there did or did not exist an excess of white corpuscles in the blood of such patients."

In the Guy's Hospital Reports for 1857, Dr. Wilks4 was able to report the absence of "leuchæmia" "in that class of cases which has specially gained the attention of Dr. Addison, and which he has designated idiopathic anæmia." This seems to be the first microscopic examination of the blood in pernicious anæmia. might be mentioned that the first white cell of the blood to be seen and noted was discovered by Nasse in the year 1835. The first enumeration of the red cells was by Vierordt in 1851).

Dr. Leared reported a case in the Transactions of the Pathological Society of London, 1858, ix, 438. He described the cells of the blood and was the first to note their remarkable variation in size and shape. He says "The blood disks presented the peculiarity of being very variable in size, many of them being of an oval shape, while others had the ordinary nummulated appearance." The name poikilocytosis was invented by Quincke, on the

analogy of poikilothermic.

In 1871 Professor Biermer, published in Germany a description of a new disease which he called progressive pernicious anæmia. Apparently Addison's work was unknown to this worker and soon a controversy arose as to priority. This was continued for several years. In 1877 M. Lépine,16 in France, criticized Professor Biermer for overlooking the work of Addison. Lépine quoted descriptions of several cases of fatal anæmia reported by men prior to Addison. Two cases were published by Dr. Barclay²⁸ in 1851. He was the first to call attention to glossitis in pernicious anæmia. Piorry² in 1840 reported one case and Lebert in 1854 recorded two cases of this disease. It would appear from all the evidence available that to Addison should go the credit for the first clear description of pernicious anæmia. It was included by Dr. Wilks in the first edition of his lectures ten

years before Biermer's publication. Dr. Barlow, in his "Practice of Medicine," quotes Addison's description, and says: "to these cases Dr. Addison stated that he applied the term idiopathic anæmia."

The Canadian Medical and Surgical Journal for 1877 contains a paper on a "Case of progressive pernicious anæmia (idiopathic of Addison)." This is by Gardner and Osler,20 and in it is the statement: "Dr. Howard, of McGill University, has long taught the existence of Addison's anæmia."

Biermer was the first to show that hæmorrhage of the retina was common and that it was

a valuable aid in diagnosis.

In 1874 Professor Immerman, 11 of Basle, reported two cases of "progressive pernicious" anæmia. He, it seemed, was also ignorant of the work of Addison. He gives the characteristics of the disease as follows:-

1. Absence of preceding hæmorrhage or other

2. Extreme degree of the anemia.

3. Pyrexia without local inflammation. 4. Progressive and malignant course.

Pepper⁹ in 1875 thought that the bone-marrow was the original source of the disease. Cohnheim a year later advanced a similar view.

Quincke,14 in 1876, reported cases of this disease which agreed with the description of the earlier writers. He objected, however, to the term "progressive," but favoured the name

pernicious."

Lépine16 in Sur les Anæmies Progressives, published in 1877, suggested that the term essential anæmia should cover cases of anæmia due to insufficient food, pregnancy, dyspepsia, and diarrhea, and even those cases which showed changes in the spleen, lymph-glands, or marrow.

In 1876, Quincke and Eichhorst wrote accounts of the shape and size of the red cells. The latter gave the following characteristics of "malignant" anæmia, (quoted from Guy's Hos-

pital Reports, 1883).

1. Certain disks have been found much smaller and of a much deeper colour than usual. These have been named microcytes. Though very frequent in idiopathic

anæmia, they are not absolutely constant, and they may be met with in smaller numbers in normal blood.

2. The shape of the corpuscles has been found altered. They lost their characteristic discoid figure, no longer form rouleaux, and are crenated, irregularly shrunken, globular, pear-shaped or twisted. Crenation is a phenomenon of no pathological significance. Those who, in teaching histology, have had the opportunity of seeing specimens of blood from a number of healthy young men are well aware of this, and will, I believe, also agree that other changes of shape may occur after blood is drawn which is not in any way morbid.

3. The effects of evaporation and change of tem-

perature were guarded against, and control observations were made on the blood of other patients suffering from phthisis, chlorosis, and Hodgkin's disease. They, like other observers, found that the red disks varied considerably in size and shape and did not form rouleaux; but they also noticed that the hæmoglobin collected together and then oozed out of (or was expelled from) the corpuscles. This separation of the stroma, first observed by Brucke, and somewhat fancifully called exit of the zooid from the cecoid, is well known as the constant result of adding astringents to the blood disks, and has also been observed (by Braxton Hicks and others) as a spontaneous process. Whether it denotes excessive amoeboid activity from imperfect differentiation of the protoplasm, or whether it is a natural mode of death and disintegration this phenomenon cannot be considered constant in idiopathic anæmia. It has, however, been observed and figured by Dr. Bramwell.

4. Nucleated red corpuscles have been seen in cases of fatal anemia, generally globular instead of discoid, and larger than ordinary. These occur normally in the red marrow and in the splenic blood. They have also been seen in the circulating blood of mammalia.

been seen in the circulating blood of mammalia.

5. Reiss has observed the presence of large cells containing red disks within them, "giant cells" such as are found in the spleen and red marrow.

 Max Schultze's granular masses have sometimes been seen in unusual abundance.

Ponfick¹⁰ stated that when red cells were destroyed the hæmoglobin was deposited in the

Quincke, Grohe, Rosenstein, and Tranchimond, observed that there was a dark-gray staining in the pancreas, spleen, liver, and kidneys. This was attributed to sulphide of iron. They reported that with the reduction of hæmoglobin in the blood there was an increase of iron in the tissues. Hopkins (1893) and Scott (1894) confirmed the finding of iron in the liver. William Hunter⁸³ in 1900 summed up his work on hæmosiderin in the liver of pernicious anæmia; he showed that the liver in this disease contained more iron than in any other type of anæmia; and also emphasized the importance of the symptoms in the intestinal tract.

Paul Ehrlich discovered the method of drying and fixing blood smears by heat, his triacid stain, and detected the granules in "mast" cells by basic aniline dyes. This was in 1877. In 1882 he suggested the division of the leucocytes into neutrophilic, basophilic and oxyphilic. Ehrlich first drew attention to the fact that in severe anæmias the signs of degeneration and regeneration of the red cells lie side by side. According to him the formation of poikilocytes or schistocytes is the most important sign of degeneration in anæmic blood. Quincke was the first to attach great importance to poikilocytosis in anæmic blood, and thought that he had discovered a specific sign of the disease. further sign of degeneration of the blood in severe anæmias Ehrlich mentions those endoglobular changes in the corpuscles, to which he gave the name "anæmic degeneration." They coincide with those changes which were later called polychromatic degeneration by Gabritschewski, and karyolysis by Troje.

Ehrlich first divided nucleated red cells into two groups; normoblasts and megaloblasts. He considered the normoblast as a sign of newblood-formation. Von Noorden called attention to a blood crisis in pernicious anæmia, and he noted that during such the normoblasts were found in larger numbers in the blood. Paul Ehrlich also was the first to note that megaloblasts were more uncommon than normoblasts, and that their appearance showed that the newformation of blood was not normal. When they lost their nucleus they became the so-called megalocytes, large cells rich in hæmoglobin with no depression. He held that megaloblasts and megalocytes were diagnostic of true pernicious anæmia. If these cells underwent poikilocytosis the anæmia was one of exceptional severity.

In 1881, Ehrlich²⁶ first used methylene blue as a blood stain, and noticed that several of the red cells contained a bluish network. Not only did this worker develop methods for the examination of the blood-corpuscles but he added greatly to the knowledge of pernicious anæmia.

Eichhorst in 1878 stated that the red blood discs were larger than normal, 8 or 9 micro-millimetres being the most frequent diameter, instead of 7 or 7.5.

The first careful record of the temperature in pernicious anæmia was made by Professor Im-

Although arsenic had been used in Germany and England in the treatment of severe anæmias and in Hodgkin's disease, it remained for Byrom Bramwell¹⁷ in 1877 to report eight cases of this disease in four of which he used arsenic in the form of Fowler's solution. Recovery resulted in three. In the Edinburgh Medical Journal for this year, Bramwell remarks: "I would not for a moment have it supposed that arsenic will be found a specific for this disease." Gautier about 1897 suggested the subcutaneous injection of cacodylate of soda in pernicious anæmia.

Laache in 1883, and Kahler in 1888, believed that a relative richness in hæmoglobin, as compared with the diminution of the red corpuscles, was characteristic of this disease.

It was in 1884 that Lichtenstern³⁶ noticed degeneration of the posterior columns in pernicious anæmia.

Between the years 1890 and 1898 Von Noorden, Einhorn, Stewart, 11 Grawitz, Martius, and others, claimed that 'achylia gastrica' was an etiological factor in Addison's anæmia.

Israel and Pappenheim,²⁵ by the use of neutral red, saw granules in the anæmias. This was in 1896. Mitochondria was first observed by Meves²⁴ in red cells in 1907. An Italian worker, Cesaris-Demel, in 1907, with brilliant cresyl violet noted granules, filaments and networks in red cells. In Europe they were called granulo-reticulo-filamentous cells. In America they are called reticulated cells. They are increased in pernicious anæmia.

It has been stated than in 10 per cent of the

cases this disease is familial. Palmer Howard of McGill College, was the first to mention this fact. In 1891 Klein³⁴ saw the disease in three brothers and sisters.

Addison mentioned the fact that pernicious , anæmia occurred "chiefly in persons of a somewhat large and bulky frame." Levine and Ladd³⁵ in 1921, and Maitland-Jones³⁷ in 1922, called attention to the frequency of gray or white hair in the subjects of this disease.

Draper²⁹ in 1924, from an examination of 45 cases of pernicious anæmia, noted the following characteristics in the patients: People with pernicious anæmia have short broad faces; large mandibular angle; very short noses; short but deep wide chests; especially wide subcostal angles; and (especially in males) very long thin ears.

In 1913, Eppinger,²¹ De Castello,²² and Klemperer,²³ independently of each other, suggested the removal of the spleen as a curative measure. Curiously enough, each of them had a different reason for the procedure. Eppinger had observed a diminished output of urobilin and other evidences of diminished hæmolysis after removal of the spleen for other reasons. De Castello saw benefits from splenectomy in splenic anæmia and hæmolytic jaundice. Klemperer had noticed polycythæmia following the removal of this organ after lacerations.

Barker and Sprunt, in 1919, showed the importance of a liberal and well-balanced diet in pernicious anæmia. Mosenthal,40 in 1918, demonstrated the fact that a positive nitrogen-balance can be restored by forced feeding.

Gibson and Howard³² in 1923 showed that more favourable nitrogen and iron balances could be maintained in pernicious anæmia by a diet rich in iron and comparatively low in caloric and protein values, and urged the use of iron-rich and vitamine-adequate diets.

Whipple, et al,43 (1920-1925), did valuable work on the regeneration of blood in experimental hæmorrhagic anæmias.

Minot and Murphy,³⁹ in 1926, prescribed a high iron diet of liver. This was low in fat and carbohydrate and gave remarkable results.

The transfusion of blood was tried by the English and German workers. Quincke advocated arterial transfusion and reported recovery following the transfusion into the radial artery of 80 c.c. of human blood. Others reported failure from it. In 1914 Huston⁴⁴ first suggested sodium citrate for blood transfusion. Agote⁴⁵ and Lewison⁴⁸ simultaneously published reports on its use in 1915.

In 1917, Archibald27 and Minot and Lee38 pointed out the possibility of "recognizing five clinical types of pernicious anæmia, depending upon the balance maintained between blood-destruction and blood-regeneration. In the first,

there occurs a rapid unremitting course with oligocythæmia, marked degree of abnormal bloodformation, and a less degree of bilirubinæmia. In the last, there occurs a long monotonous course, with much evidence of abnormal bloodformation and a less degree of bilirubinæmia, the so-called myelotoxic cases. Between these extremes there lie three types of remitting cases. The middle type of the five is one which may be synchronously observed evidences of abnormal formation, hyperbilirubinæmia and the appearance of immature forms. As Minot remarks, this middle type of pernicious anæmia bears a definite resemblance to "Acquired Hæmolytic Jaundice." (Cornell).

The high icterus-index in this disease was pointed out by Bernheim⁴⁷ in 1924. This may not have been the first mention of it, but I have not been able to find an earlier.

The first literature on pernicious anæmia in America was from the pen of Pepper in 1872 and 1875. Gardner and Osler gave the first contribution from Canada in 1877.

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Rapid and Simple Method of Determining Nerve Injuries in Extremities.—In 1,700 nerve injuries systemic examination has revealed to K. Winfield Ney, New York, that these injuries, with very rare exceptions, all involve, to some degree, even in the slightest injuries, the motor function of the fingers and toes, and that, with the exception of the upper arm type of brachial plexus lesions, an inspection of movement in the fingers and toes will reveal nerve involvement. The upper arm type of brachial plexus lesion may be readily determined by paralysis of the deltoid, biceps or triceps-most commonly all three. Injuries to the anterior crural nerve resulting in complete loss of extension of the leg are exceedingly rare, as the nerve on leaving the abdominal cavity has divided into a number of branches, all of which are rarely involved, and in serious injuries the involvement of the adjacent femoral artery completely overshadows the nerve lesion. An injury to the musculospiral nerve in any part of its course, even to the lowest portion of the posterior interesseus nerve, will result in loss of extension to the thumb. Therefore, inability to extend the thumb completely immediately suggests a musculospiral involvement. With the median nerve, injury in any location will affect the opponens pollicis, making it impossible to oppose the palmar surface of the thumb to the pads of the extremity of the fingers. While it may be possible to flex the terminal phalanx of the thumb through the long extensor, or the first phalanx by action of the flexor brevis pollicis, which is partially supplied by the ulnar nerve, it is impossible to rotate the thumb over the palm. In injuries of the ulnar nerve, the interosseus muscles are conspicuously involved, which prevents lateral movement of the fingers. Examination of the fingers will reveal the absence of these lateral movements by the inability to make the fingers into a cone; that is, bunching the ends of the fingers. Normal ulnar motor action will permit the formation of

a four finger cone; normal median nerve action will permit the rotation of the thumb and the placing of its palmar surface against the tips of the ulnar cone, making a five finger cone. Musculospiral injuries may be further confirmed by determining the presence of anæsthesia over the dorsal surface of the base of the thumb, also inability to elevate the wrist and extend the fingers at the metacarpophalangeal joint. If the patient can make a four finger cone, but is unable to oppose his thumb to the finger tips to make a five finger cone, he has a median nerve paralysis, which may be confirmed by determining the loss of sensation in the palmar surface of the first three fingers and by the inability to flex the index finger when the other fingers are extended. A patient who is unable to make a four fingered cone has an ulnar paralysis which may be confirmed by determining the loss of sensation in the little finger, and by testing the action of the interosseus muscles in individual lateral movements of the fingers. In examination of the lower extremities to determine the presence of an injury to the sciatic trunk or its two terminal divisions, the tibial and peroneal nerve, it is usually sufficient to inspect movement of the If the toes can be extended, one may toes. readily conclude that the peroneal nerve and the peroneal portion of the sciatic (external popliteal) has escaped injury. If the toes can be flexed, the tibial nerve (internal popliteal) and the tibial portion of the sciatic have escaped injury. If the patient is unable to extend the toes, a peroneal injury may be confirmed by the loss of sensation in the cleft between the great and second toe-also by the loss of dorsal flexion in the foot (extension). The inability to flex the toes means an injury to the tibial nerve or the tibial portion of the sciatic, which may be confirmed by loss of sensation in the sole of the foot and the toes, and the inability to plantar flex the foot.-J. Am. M. Ass., 1927.

Editorial

THE TREATMENT OF HIGH BLOOD PRESSURE

T has sometimes happened that a physician, in treating some particular ailment, has faithfully followed the practice usually employed in such cases, has consistently heeded the advice of those he considered most competent to give it, and, yet, has failed in obtaining the satisfactory results he was looking for. In despair he throws all rules to the winds, tries some form of attack that contravenes all the accepted rules of the game, and, after a time of doubt and fear, is both surprised and gratified to find he has benefited, perhaps cured, his patient. Most men, in large practice, must have had this experience at some time. It is true that there are fashions in therapeutics, as there are in bonnets. This is not to say that the fashions are wrong, or that they are not based on what appear to be sound reasons. At the same time, it is also true that we are apt to get into a rut and adopt a "rule-of-thumb" kind of practice. This unthinking attitude of mind is to be deprecated. When such anomalies are met with as have been indicated, they may be merely the exceptions that prove the rule. Much wiser is it, however, to conclude that they demand a further application of our powers of observation and a revision of the theories on which we are working. These reflections are prompted by an article entitled "An Unusual Management of Essential Hypertension," by Dr. Nicholas Lukin, which appeared in the Annals of Internal Medicine for September, 1927.

A thoughtfully conceived pronouncement on a disease by the patient who was suffering from it is entitled to careful consideration, and Dr. Lukin was himself the patient. He manifested the usual features of arterial hypertension, headache, giddiness, dyspnæa, fatigue, epistaxis, various digestive disturbances, and irritability. On consulting several colleagues, the diagnosis of primary or essential hypertension, with chronic left ventricular decompensation was made. The presence of a beginning arteriosclerosis was

also surmised. The systolic blood-pressure proved to be above 200, and the diastolic slightly more than 90. The etiological factors in his case were thought to be, mental strain, worry, overwork, and, possibly, overindulgence in tobacco.

The usual treatment was prescribed:—
rest in bed, diet restrictions in the matter of
animal protein, a considerable increase in
the use of vegetables, a lessening of the
total caloric intake, interdiction of tobacco
and coffee, and a restriction in the amount
of sodium chloride taken; an effective use of
salines and vegetable cathartics; and the
employment of electric light and hot-water
baths, associated with the drinking of water
freely during the baths.

Unfortunately, or fortunately, rather, as Dr. Lukin puts it, he was unable to carry out this programme faithfully. The dietary rules were complied with strictly, but, for various reasons, the other rules could only be complied with partially. The hot baths and the drinking of cold water were entirely abandoned. After several months his condition was worse.

Realizing that the condition could not be cured, but only checked, the writer set himself to devising a set of rules suitable to his own position, which might also be helpful to his patients in a similar case. These are: work to be permitted to the limits of economic need and psychical satisfaction; worry and physical strain to be avoided; family "jars" to be eliminated; only a small amount of raw and fresh vegetables to be allowed in the dietary, as a relish; a bulky vegetable diet to be forbidden, especially of articles that leave a large residue in the intestines, and of legumes that cause gaseous fermentation: acid fruits to be used freely; a high animal protein diet, within caloric needs, to be adopted; meat, twice or thrice a day, to be the chief food; table salt to be restricted, but other condiments permitted; coffee, in fairly concentrated form, to be used instead of water and all other kinds of fluids; the intake of fats and lipoids to be reduced to the unavoidable minimum; bread to be limited as much as possible, and taken only in the form of toast as it was considered a cause of stasis, hyperacidity, and putrefaction in those with cardiovascular disorders: sweating and hot and full body-baths to be forbidden; lukewarm showers, or hip baths, to be substituted, and cold showers over the head, neck and face every morning, urged. The usual directions for the regulation of rest, amusement, and exercise were not altered.

As to the results of this iconoclastic regimen Dr. Lukin speaks temperately. He does not claim for it that it will add years of life to the hyperpietic patient. But he does claim in his own person, and from the reports of his patients, that it increases the sense of well-being, and invariably creates a desire to live and enjoy the span of life that may be left.

The rationale of this mode of treatment deserves looking into. All will agree that, inasmuch as it is usually impossible for those suffering from high blood-pressure to give up work, the work should be so regulated as not to be excessive or unduly worrying. In fact, regulated work will probably be safer than unregulated idleness. All will agree, too, that mental excitement and a quarrelsome atmosphere should be avoided. Family "jars" are particularly pernicious. The chief departure from the rules is in the advocacy of a high protein diet. Dr. Lukin holds that a large fermenting residue produced by vegetables causes increased intraabdominal tension, intestinal spasm, and an added call upon the cardiac reserve. To check the possible ill effects of the purin derivatives the free use of fruit is advised. In this connection it may be remarked that our line of treatment should be conditioned by two factors that are commonly involved in cases of hyperpiesis, viz., the state of the kidneys and the state of the heart. If elimination is normal, with some reserve one need not worry about a high intake of protein. If the heart is labouring, i.e., if compensation is threatened, we naturally should endeavour to lessen the strain upon it. Goldberg, formerly Professor of Comparative Pathology at Cornell University, has pointed out that arteriosclerosis (which is a frequent result of hyperpiesis) is much commoner in herbivorous animals than in the carnivora. This certainly suggests that diet is an important factor, and that a purely protein menu has its advantages.

The limitation of fluids will generally be accepted. Their place will largely be supplied by the juices in the fruits prescribed. The fad that many people have of drinking excessively of water, "to flush out the kidneys," is in many cases fraught with danger. This practice is to be deprecated, as for a considerable portion of the day there must be a notable increase of the blood-

The advocacy of large amounts of coffee is decidedly not "according to Hoyle." Yet, Dr. Lukin in his own person experienced no harmful effects, and, for his support, quotes Anrep (Physiological Reviews, 1926, October, No. 4) who found that caffein produces a lasting increase in the coronary

circulation.

His reasoning anent the pernicious effect of full hot baths is open to debate. Briefly, it is to the effect that the temporary lowering of the blood-pressure that results does not at all compensate for the concomitant result on the heart. The circulation in the vital centres is slowed, friction against the vessel walls is increased, and to maintain an efficient circulation the heart must work harder. This may be so, but hardly sufficient account seems to be taken of the regulative power of the vasomotor nerves.

The elimination of fats and lipoids is advisable largely because of their high caloric value, and because they readily cause digestive disturbances. Some experiments bearing on this point were conducted a few years ago by Anitschkow, who found that in animals in which he had induced increased blood-pressure the incidence of arteriosclerosis was hastened by concomitant feeding with cholesterol and lipoidal substances.

In regard to the possibility of lowering an excessive pressure, Lukin thinks that his regimen has been effective in some cases in this regard, though it failed in his own case. Those who have tried it know that drugs are of little value for this purpose. Indeed, it may be questioned whether it is desirable that an existent blood-pressure should be reduced. If pressure is high, it is probably necessary for an efficient circulation. What we should aim at is to safeguard the heart and kidneys and prevent, or delay, the onset of that team-mate of hyperpiesis—arteriosclerosis. Dr. Lukin's regimen seems to be logical. It is, certainly, worth a trial. If

there is anything to add, it is that, as infection tends to promote arterial degeneration, concealed foci, which may be the cause of chronic sepsis, should be looked for and appropriately dealt with.

A. G. NICHOLLS

THE CHANCE OF DEATH FROM CANCER

HAT there is a steadily increasing incidence of cancer in civilized countries is generally accepted. In support of this statement many sets of statistics might be quoted. A few figures will suffice. A statement, for England and Wales, published in 1923 by the British Ministry of Health, shows that the death rate for cancer was more than sevenfold what it was in 1838, and this in statistics that have been purged of error in the matter of possibly wrong diagnoses in the earlier years. In San Francisco, the deaths from cancer increased seven times in thirty-two years, from 16.5 per 100,000 in 1866 to 103.6 in 1898. Imbert (Brit. Med. Journ.) quotes the following from the statistics of a large hospital in Marseilles. In the period 1871-75 there were 11 cases of cancer in each 1,000 admissions; in 1920-24, there were 40. The Public Health Report, Washington, 1927, Vol. XLII, No. 1, gives the number of deaths from cancer in the death registration area of continental United States as 95,504 in 1925 as compared with 91,138 in 1924; the death rates per 100,000 estimated population were 92.6 in 1925 and 91.9 in 1924. A Special Report of the Departments of Public Health and Public Welfare, Dec., 1925, No. 1,200, for Massachusetts, states that a study of the crude rates of mortality shows that there has been an increase in the mortality from cancer since 1850. Furthermore, the increase in the rate is more marked among the older persons. Between the ages of thirty and fifty the increase in females is but slight; in males it is most noticeable in the decade from thirty to forty.

Whether this increased death rate from cancer is actual as well as apparent has led to much discussion. Some observers hold that the increase is merely numerical, due to the fact that, owing to improved methods

of hygiene and the advances in medical science, more people reach the cancer age; also, that improved methods of diagnosis, together with more general enlightenment, have led to more frequent and earlier recognition of the disease. While admitting that these arguments have their force, most of those competent to judge have come to the conclusion that cancer as a cause of disability and death is increasing disproportionately. Louis I. Dublin, statistician for the Metropolitan Life Insurance Company, has this to say:-"We have made an analysis of the rates concerning close to 125,000 deaths from cancer which have occurred among the many million industrial policy holders of the Metropolitan Life Insurance Company between 1911 and 1925 and have satisfied ourselves that the apparent increase as shown in the annual figures of cancer mortality was real and significant." A parallel investigation by Dr. Schereschewsky of the United States Public Health Service of the data for the registration area of that country led to the same conclusion. Dr. Dublin adds, "The facts point unmistakably to a significant increase in the cancer rate at the older age periods of life, especially among males, and, in certain types of cancer, by organ or part affected."

By the construction of a life table it is possible to compute the probability of dying from any disease at each year of age from birth onward. One can then take an initial group of 100,000 persons, either at birth or at the age of ten, and reduce this group year by year according to the calculcated mortality ratios until the entire number has been accounted for by death. Having done this, the cancer deaths can be separated from the rest, and similar calculations be made of the probability of death from cancer. By dividing the number of deaths

from cancer at and above any age by the total number of individuals in the group at that period, in a life table population, we obtain the measure of the probability of

dying from cancer.

Reasoning from figures obtained by this method. Dr. Dublin has arrived at a very alarming and disconcerting conclusion. He says:-"For each of the ages beyond ten right up to the age of ninety for males there was an increase in the cancer hazard, running approximately from 40 to 50 per cent. Among females, a slightly different picture is shown, with lower increases at the earlier ages and greater increase in cancer probability at the higher ages. At the ages of seventy and eighty the percentage of increase was well over 40 for males and about 30 for females. This rate of increase applies to the period from 1910 to 1924, and, as time goes on, owing to the betterment of conditions in other directions, we may expect to find that matters are becoming worse." The prospect is truly appalling.

What are we going to do about it? Dr.

Dublin thinks that our efforts to combat cancer during the past ten years have been relatively puny. Perhaps this is so. Yet. we must admit that the amount of work turned out of research laboratories on the cancer problem is enormous and of excellent quality. It may very well be that the scope of the enquiry has been too much restricted. In our opinion more attention should now be given to such matters as climate, light. diet, race, heredity, the general bodily metabolism, including the influence of the ductless glands, in the elucidation of the etiology of cancer. Much is known about the nature of cancerous cells and about the local tissue reactions that are set up, but we need to know more in regard to the bodily constitutions of the host, and of those known to be predisposed to the affection (if such can be discovered). These fields of enquiry are, no doubt, difficult and time-consuming, perhaps more so than those already investigated, yet are likely to prove productive. They need cultivating.

A. G. NICHOLLS

GLUKHORMENT AND SYNTHALIN

N an article on insulin substitutes in the last number of this Journal brief mention was made of "Glukhorment" and of some favourable results obtained with it by von Noorden. The Lancet of December 3rd contains an important communication on this preparation by Dale and Dudley, of the British Medical Research Council. Asked by the firm who manufacture it to have the preparation tested clinically, they submitted it to chemical examination and obtained "a guanidine derivative closely resembling synthalin," and in fact the rigorous chemical tests applied permitted no differentiation. Pharmacological action on rabbits was "closely similar to that of synthalin on rabbits. Since von Noorden had stated that glukhorment contained neither synthalin (now stated to be deca-methylenedi-guanidine) nor any other guanidine derivative in recognisable amount, he was at once communicated with, and at his request Dale and Dudley publish in their paper an extract of a lecture given by him on Novem-

ber 8th last, showing that he also had come to similar conclusions. In this lecture he said, in part, "The preparations.....on which I remained dependent until the beginning of the actual manufacture in July were prepared on the smallest scale, and, according to the assurance on word of honour, which I then demanded and received, were prepared by strong tryptic digestion of fresh pancreas substance for about eight days without any kind of addition.....

"The preparations obtained by the later development of manufacture on the large scale failed by far to attain the activity of those obtained in small-scale working..... Wiechowski has stated a few days ago in the Medical Union of Prague that he has found a guanidine derivative in glukhorment, which corresponds with synthalin in important reactions and in its pharmacological properties. As to whether it is a case of true identity or not, Wiechowski obtained no definite evidence, according to his letter

to me. Assuming identity, scientific logic would present only two possibilities:

"Either, in spite of assurance to the contrary, without my knowledge and against my will, the guanidine preparation known as synthalin is added to glukhorment. In that case, we should be dealing with a gross breach of trust in relation to myself and to the public. According to the assurance repeated to me a few days ago, on the word of honour of the responsible chemist, at no time, either earlier or recently, has synthalin been mixed with glukhorment.

"Or, the remarkable fact would be presented that from the pancreas, together with other products of decomposition, a substance chemically and pharmacologically at least very similar to synthalin can be obtained—a fact which would be of great importance for the study of intermediary metabolism....."

Dale and Dudley state that their own results are published at von Noorden's explicit request, and are to be regarded as a contribution to the experimental investigation of the matter which he regards as imperative. They point out the great theoretical value accruing, should it prove that tryptic digestion of pancreas produces a substance such as synthalin so different in composition from any as yet known to be produced in the organism, and the practical bearing of these results, that glukhorment cannot be substituted for synthalin, for patients who have shown an intolerance to the latter.

The whole matter seems to be of such importance that further contributions to decide between the two possibilities that von Noorden has indicated may be expected very shortly, and the final results will be awaited with great interest.

A. T. CAMERON

ON TONSILLECTOMY

INDER the heading of "The Tonsil Question," Stoker*, in The Lancet, deplores the fact that tonsils are removed merely because they are hypertrophied, or because, in the case of an obscure tonæmia, it is imposs ble to find any focus in the teeth or in the intestines. The same discrimination should always be used before advising a tonsillectomy as would be used in advising a radical mastoid operation. Stoker believes that the tonsils contribute mucus and a reducing substance to the saliva, and that they reinforce the protective mechanism by increasing the leucocytes, and by stimulating local growth, for, according to Carrel, the proliferation of epithelium and connectivetissue cells is increased by the presence of neighbouring colonies of lymphocytes. Tonsillar hypertrophy usually coincides with the period of maximum growth of the individual, before the child's resistance to infection is complete.

Stoker also points out that tonsillar hypertrophy is more common where there is malnutrition, and he quotes Stucky who found that tonsillar hypertrophy was very common in the children of Kentucky mountaineers, who were fed on a de-vitalized diet owing to deficiency of vitamines. Even after tonsillectomy, these children did not improve until they were given a diet of milk, eggs, butter, and whole meal.

If the tonsil is so hypertrophied that mechanical obstruction exists, giving rise to nasal obstruction and otitis media, or if there is a definite history of local inflammation, or if the tonsil appears to be definitely infected, the tonsils should be removed. Many surgeons believe that tonsillar infection is a common cause of goitre, and advise their removal if they look at all suspicious, before or after a thyroidectomy. The so-called "adenoid facies", Stoker suggests, is really more than mere nasal obstruction, and is probably due to a defective pituitary action. Citelli has stated that there is an anastomosis between the veins and capillaries of the naso-pharynx and those of the hypophyseal region.

Before removing tonsils, Stoker believes that a careful blood examination should be made, to determine the presence of any lymphocytosis or leucopenia as an indication

^{*} The Lancet, 1927, cexiii, 1125.

of chronic infection. This author believes that, even in the absence of definite ulceration, if there is a bacterial infection in the tonsillar crypts, without proper drainage, there will be absorption of toxins.

Kaiser* has studied a series of cases to determine whether an early tonsillectomy will preserve a child from acute rheumatic fever or if it will prevent recurrence when the child has already suffered from rheumatism. He quotes Hunt, of Guy's Hospital. London, who found a recurrence of acute rheumatic fever in 53 per cent of children in whom a tonsillectomy had been performed. and a recurrence of only 42 per cent in the cases where the tonsils had not been removed. In Kaiser's series a complete history was obtained of 48,000 children, in 20,000 of whom the tonsils had been removed. The majority of cases had been followed over a period of five years. The incidence of upper respiratory infection had been decidedly lessened in the cases operated on.

In considering rheumatic infection, Kaiser groups the cases into those with definite acute rheumatic fever, those with joint pains, and those with growing pains or the eruption of a cutaneous ervthema. Great care was exercised to determine, if possible, whether the first rheumatic symptoms occurred before or after the operation of tonsillectomy, and the incidence of carditis is considered in each group. In rheumatic fever, growing-pains and joint-pains, there was about 1 per cent less occurrence following tonsillectomy. In cases of chorea, there was 0.1 per cent less occurrence following tonsillectomy. In carditis, there was 0.7 per cent less following tonsillectomy and in scarlet fever 7.4 per cent less following tonsillectomy.

Kaiser concludes that the tonsil is a factor in the causation of rheumatism, scarlet fever, and chronic heart disease, but from a careful study of the statistics and percentages quoted, it will be seen that the

improvement following tonsillectomy is little better than 1 per cent or 2 per cent. except in the case of scarlet fever. Some of the figures would tend to show the occurrence of carditis in rheumatic fever to be more common after tonsillectomy than when no operation was performed, but the author's final conclusions are that carditis is less frequent following tonsillectomy.

Welch* of Kansas City has carried out a histological study of tonsils removed at the Alfred Benjamin dispensary, (1,000 cases). A careful gross examination was made of each pair of tonsils after removal, and where the slightest suspicion of a lesion was found, histological examination was carried out. Two per cent of the cases were tuberculosis, 1 per cent malignant; 43 per cent did not reveal any gross change whatever, 28 per cent showed cheesy cryptic concrecretions (not evidence of serious disease), so that 71 per cent of the tonsils examined were not seriously affected; only 7 per cent were ulcerated or contained true abscesses; 22 per cent were scarred, evidence of serious infection that had cleared up. He notes that the greatest number of non-infected tonsils was obtained in June after school closed, and in September after school opened. When tonsils were removed from several members of the same family, only one pair of tonsils bore evidence of infection.

These few facts would seem to indicate that the normal tonsils exert a protective influence over the growing child, and in many cases have been needlessly removed. Proper attention to diet and general hygiene may eliminate many cases of hypertrophy and glandular enlargement. The recurrence of acute rheumatic fever and heart-disease has been somewhat lessened by the removal of tonsils, but as the percentage of improvement is so small, there must be other foci of infection which are more concerned in the production of these conditions.

W. J. McNALLY

^{*} J. Am. M. Ass., 1927, lxxxix, 2239.

^{*} Welch, A. S., J. Am. M. Ass., lxxxix, 2180.

A RECENT CENSUS IN A DISTRICT OF MONTREAL

WE are all aware of the value of facts brought to light by a census carefully taken. Not only does it reveal the bright points which may afford encouragement, but also affords needful information regarding the darker spots which require alteration or removal. Several investigations of this character have been carried out recently in Canada, regarding the extent of diseases, such as tuberculosis and syphilis, in the various cities and localities of the Dominion. Two years ago, a very valuable investigation was carried out in the city of Three Rivers into the amount of tuberculosis existing in that city and on the way it was being handled. Last winter a very useful investigation was carried out by one of our large insurance companies on the amount of sickness and accidental disability existing in two sections of the city of Montreal. The survey covered two parishes, a health demonstration area of the University of Montreal, and the Montreal anti-tuberculosis and General Health League, and included a population of approximately 20,000. The survey was made by public health nurses from the Health Centre. The forms, tabulation, and publication were made by the Metropolitan Life Insurance Company.

More than two and one-half per cent of the population, 495 cases, were found to be so sick as to be incapacitated from work. Of these, 99 were cases of influenza and acute respiratory diseases, not including tuberculosis. There were 26 cases of tuberculosis of the lungs in the incapacitated group, and an additional 35 cases were found where the patient was continuing at work. There were 37 cases described as rheumatism; 31 cases designated cerebral hæmorrhage or paralysis; and 41 cases of heart disease.

The services of a physician were employed in 77 per cent of the cases, and 20 per cent of those under medical care were attended by a visiting nurse. This high percentage reflects the result of the work previously done in the surveyed area.

This survey was productive of much good, in the sense that it brought the work of the Health Centre to the attention of the population, and in many ways was productive of a better understanding between the people and the organized health-activities of the community.

It is evident that sickness and accident are both a social and an economic problem about which we should have all possible information, if we are to deal intelligently with their prevention. The survey is a contribution to this needed information. Those desiring a copy of this report may obtain one by writing to the Metropolitan Life Insurance Company at Ottawa.

A CANADIAN HOSPITAL SERVICE—A NEW DEPARTMENT

WE are pleased to announce that, thanks to assistance from the Sun Life Assurance Company, the Association is establishing a special Hospital Service under the direction and control of Dr. Harvey Agnew of Toronto, who has been appointed as Associate-Secretary of the Association. It has been felt for some time that a central bureau acting in an entirely disinterested capacity would be of great assistance to the numerous small hospitals, which are being erected throughout the Dominion, and are confronted with the many problems of organization, the purchasing of equipment, and development of the nursing staff. The

experience gained by our larger and older hospitals is lost because of its inaccessibility. A central bureau under a capable man can render such experience available and be of inestimable value by enabling expert advice to be promptly given, thus securing efficiency with a minimum of cost.

Dr. Agnew, who has been appointed to this position, is considered to be in every way eminently qualified for such a position. Educated at the Humberside Collegiate School, he graduated in Medicine in 1918 from the University of Toronto, and at once went overseas. After the close of the war, he had two years hospital service in

New York and Toronto, and later on took post-graduate courses in London and Vienna. On his return to Toronto, he was offered an appointment on the staff of the Toronto Western Hospital, and has taken an active part in its reconstruction and reorganization.

Such a Hospital Service, as it is proposed to establish, is a new thing and, as far as it is known, has never been attempted anywhere else. In this service, it is expected that Dr. Agnew will tour Canada and visit the various hospitals to make a study of their special problems. He will also endeavour to organize Provincial, County and City Hospital Associations, which will enable local associations to get together and discuss their difficulties.

Editorial Comments

SIR WILLIAM OSLER MEMORIAL VOLUME

We desire again to call attention to the fact that a few volumes of the second impression of the Sir William Osler Memorial Volume, which has been edited by Dr. Maude E. Abbott, are still for sale. This volume is in the truest sense of the word a memorial publication. Its contents comprise some one hundred and thirty appreciations and personal reminiscences, written by friends and associates of the late Sir William Osler. They are grouped in biographical sequence under the different periods of his career, and prefaced by charming introductory articles written by Professor William Welch and the late Sir T. Clifford Allbutt. Every library in Canada should possess one or two copies of this very notable volume.

INVESTIGATION OF OTOSCLEROSIS

Before the Otological Section of the Royal Society of Medicine, the President, Mr. J. S. Fraser* suggested that an investigation of otosclerosis should be undertaken in the British Empire. In 1923, he had read a paper in New York suggesting an international investigation of this subject. As the Americans had just recently begun a national investigation (see previous number of Canadian Medical Journal), the President felt the British Empire should do likewise, in the hope that the investigation might yet become international.

He discussed the main features of otosclerosis and pointed out the futility of the ordinary methods of treatment. He suggested several ways of undertaking the investigation. He believed that if each group would undertake to study a few cases thoroughly, more would be accomplished than by doing a larger number imperfectly.

As this subject requires the co-operation of all branches of medicine, it was suggested that a central committee should be formed to co-ordinate the work. It was decided, therefore, to leave the matter in the hands of the Council of the Otological Section of the British Medical Society for further investigation.

W. J. McNALLY

CONFERENCE ON RHEUMATIC DISEASES

A Conference on Rheumatic Diseases is to be held at Bath, England, on Thursday and Friday, May 10 and 11, 1928. Sir George Newman, Chief Medical Officer of the British Ministry of Health, has kindly consented to act as President of the conference. There will be three sessions: (1) Social Aspects, presided over by Lord Dawson of Penn, Physician to H. M. King George, (2) Causation, presided over by Sir Humphry Rolleston, (Regius Professor of Physic, University of Cambridge), and (3) Treatment, presided over by Sir E. Farquhar Buzzard, (Regius Professor of Medicine, University of Oxford). The local Hon. Medical Secretary is Dr. Vincent Coates, 10, Circus, Bath, England.

The Secretary of the Section on Internal Medicine, Dr. C. C. Birchard, 1487 Bishop Street, Montreal, will be glad to hear from any person wishing to present a paper on the subject of Internal Medicine at the meeting of the Canadian Medical Association, to be held in Charlottetown, P.E.I., during the week of June 18th next.

Papers to be given under the auspices of this Section will be limited to the number of ten or less, and it follows, accordingly, that all papers cannot be accepted. An attempt will be made to give preference to those which will be short exposés of new work in Internal Medicine and to clear, concise papers of interest to the general practitioner.

^{*} J. S. Fraser, The Lancet, 1927, xciii, 1143.

Special Articles

THE CLINICAL EXAMINATION OF THE BLOOD*

By L. C. Montgomery, M.D., *Montreal*

The following remarks, in regard to certain diagnostic procedures in connection with the examination of the blood, are offered in the hope that they may be of use to the busy practitioner. It is true that all the information presented is to be found in manuals of laboratory technique, but such are not always at hand, nor is it easy for one not specially conversant with laboratory methods to pick out the essential points. The proper undertaking of the so-called 'blood-picture' should not be beyond the attainment of anyone who will take the time and make use of ordinary care. It is, perhaps, different in the matter of blood-chemistry. Here, special apparatus and standard solutions are required, which are not always available. But, at least, the practitioner should have such information as will enable him to take samples of blood and preserve them in such a way as to be of use to the laboratory specialist, for the very good reason that, unless the proper precautions are taken, the results will be fallacious.

ESSENTIALS FOR A BLOOD EXAMINATION Apparatus Required.—One requires two diluting pipettes and a counting chamber. Each pipette is a graduated capillary tube, opening into a dilatation or bulb, at the opposite end of which is a second shorter glass tube, to which is attached a rubber tube with mouth-piece. The pipette for the enumeration of the red corpuscles is so graduated that the capacity of the reservoir, measured from the line marked "1" to that on the shorter tube marked "101", is exactly 100 times the capacity of the capillary tube from its point to the line marked "1". The long tube is marked again halfway between the point and "1" as "0.5".

The pipette for counting the white cells is similar, except that the line on the short limb is marked "10", and the capacity of the bulb is ten times that of the long limb from the point to the line marked "1".

The counting chamber, of which the best type is the double, as it permits the counting of the red and white cells at one operation without rewashing, consists of a stout glass slide, provided with two counting tables, each ruled into 400 equal squares. When an unyielding coverslip is placed upon it there is formed a space 1/10

mm. in depth. Thus, a number of tiny chambers are produced, each of the capacity of 1/4000 c.mm.

Method of Taking the blood.—The finger is first thoroughly cleansed with alcohol, then rubbed dry with a clean swab. Puncture with a cutting needle. The puncture should be deep, in order to avoid pressure in obtaining the drop. Too much pressure injures the cells, and there is proportionately too much serum in the drop.

Counting the Red Corpuscles.—When a drop has been expressed, suck it up in the pipette to the point marked 0.5. If it should be drawn past this mark, tap the end gently against a piece of cotton, or other sterile material, to get rid of the excess; wipe clean, and plunge into Hayem's fluid, the formula of which is

| Sodium Chloride | | | | | | | | | 1 | gm. |
|-------------------|--|--|--|--|--|--|--|--|-----|------|
| Sodium Sulphate | | | | | | | | | 5 | gm. |
| Mercurie Chloride | | | | | | | | | 0.5 | gm. |
| Distilled water . | | | | | | | | | 200 | c.c. |

Hold the pipette in a vertical position, and rotate gently while sucking up the fluid to 101 mark. With the finger and thumb over either end, shake up and down well. If necessary, a rubber band over both ends enables the preparation to be carried and kept for considerable length of time. The dilution thus made is 1-200.

A few drops are blown out of the pipette after it has been well shaken, and a drop is allowed to flow under a cover-slip placed upon the counting-chamber. (It should not run over the edge). Let it stand, then count under the high power dry objective.

Count the cells in 5 sets of 16 small squares, add together and affix four noughts.

| Example. | 00 407 |
|-----------|-------------------------|
| 00 | 80 sq.=427 |
| 90 | 400 sq. = 427 x = 2135 |
| 80 | . 10 |
| 85 | |
| 80 | 21,350 |
| 92 | 200 |
| 4.270.000 | 4.270.000 |

Counting the White Corpuscles.—Use a pipette giving a dilution of 1 in 20. Suck up the blood to the point marked 0.5, then fill with diluting fluid (1/3 of 1 per cent solution of acetic acid) to the line on the pipette marked "11". Shake well after filling, and again before counting.

Shake a few preliminary drops from pipette, then let a drop run under the slide upon the counting chamber. Let it stand for two minutes, then count the whole of the square millimetre under low-power magnification, and multiply the

^{*} An extra-mural address to graduates, delivered on Sept. 12, 1927.

result by 200; this is because the fluid was diluted 20 times, and the space is 1/10 of a millimetre deep.

Example.

No. in sq. mm,

No. in actual space
(As space is 1/10 mm. thick.)

No. of cells in undiluted c.mm. =300x20=6000

Determination of Hæmoglobin.—The most commonly used instruments for this purpose are the Dare and Sahli hæmoglobinometers. The

latter is probably the most reliable.

The finger is cleansed with alcohol and rubbed dry. Now fill the graduated tube up to the first mark with deci-normal hydrochloric acid. Prick the finger and suck up the blood in the pipette to mark. Wipe off the end, and put the pipette into the tube containing deci-normal hydrochloric acid; then blow the blood out gently. Fill the pipette several times with distilled water, and blow out into the graduated tube containing blood and the hydrochloric acid. Now shake the tube gently, or stir, and let it stand for five minutes. Begin adding water, stir gently with a rod, and compare frequently with the standards.

Method of Estimating the Colour Index.— Find out number of red cells per c.mm.

Estimate the percentage of Hb. in given case, e.g., 30 per cent.

Calculate percentage of red cells in given case.

Example.

The Preparation of Blood Smears.—Be sure that the slides are absolutely clean and free from grease. Clean first with alcohol and then pass through the flame. The finger is prepared as for obtaining blood in counting.

Touch the drop of blood with the flat surface of a slide, then with the end of a second slide, held at an angle of 45,° pull the drop along the first slide, thus spreading it out. Use steady pressure, but not too hard, or the cells will be crushed. Allow the smears to dry in air, before

putting the slides in contact.

To Stain.—The most commonly used stain is Wright's. This must be kept completely away from water. With a pipette allow the stain to flow gently over the slide. Let it stand for 2 or 3 minutes. With a second pipette now pour on distilled water, drop by drop, until a metallic sheen forms on the surface. Now, allow it to stand for 3 or 4 minutes, decant, wash gently in distilled water, and blot. Use the oil immersion lens in counting.

The so-called vital staining is used where one

is anxious to study the reticulations in the red blood cells. This is especially desirable in cases of suspected hemolytic icterus. In this disease the blood picture shows a definite increase in the reticulated type of cell. In normal adults they are from 0.5 to 2 per cent; in severe anæmias, 18 to 20 per cent; and in hæmolytic jaundice they may occur in still greater proportions. Vital stain is prepared as follows.—

Saturated alcoholic solution of brilliant cresyl blue Salt solution (85 per cent) $\begin{array}{c} aa \\ 5 \text{ c.c.} \\ \text{Sodium oxalate solution} \end{array}$

Add the oxalate to the salt solution, then mix with the stain and filter.

Allow a drop of the stain to dry on the coverslip. Then put a drop of blood directly on the dry stain. Pull a smear in the ordinary way. Stain with Wright's stain in the usual manner. Workers consider that this granulo-filamentous substance (reticulation), which is brought into view by vital staining, is an evidence of the youth of the cells, and not of degeneration.

THE NORMAL BLOOD PICTURE

If one studies a typical smear, the following points are noted:—

1. The red blood cells are practically uniform in size and shape, and stain well. They look as if they were turned out of the same mould, except where slightly distorted during the making of the slide.

2. Some cells have paler centres than others. In studying a smear, one should examine a number of fields to get a composite mental picture, i.e., (a) whether there are diminished platelets, or not; the former condition is seen in purpura hæmorrhagica. (b) Whether there is a polymorphonuclear leucocytosis, suggesting pyogenic infection, or (c) a leucopenia, suggesting typhoid or influenza.

The cells one sees in a normal smear, other than red blood cells, are (average figures):—

| Polymorphonuclear leucocytes | 64 per cent |
|------------------------------|--------------|
| Small lymphocytes | |
| Large lymphocytes | 9 |
| Eosinophiles | 2 11 11 |
| Transitional mononuclears | 2 " " |
| "Mastzellen" | 1 " " |
| | 100 |
| | 100 per cent |

THE BLOOD IN PERNICIOUS ANÆMIA

Usually the distribution of the colour is greater and the colour is more intense than in a smear of normal blood. There is practically always anisocytosis (variation in size) and poikilocytosis (variation in shape) of the red blood cells. The presence of macrocytes and microcytes is very significant. There may also be polychromatophilia (a definitely grayish or bluish appearance of the red blood cells). Very frequently the red cells have a well stained

periphery, but are practically colourless in the centre. Nucleated red cells are present if the anæmia is severe enough. These may be either megaloblasts or normoblasts. They are more often seen in pernicious anæmia and myelogenous leukæmia.

There is usually a leucopenia in pernicious anæmia. The colour index is 1 or +1. The blood platelets, as a rule, are diminished. The fragility test is normal.

THE BLOOD IN SECONDARY ANÆMIA

The colour index is usually less than 1. The special features are:—

The tendency to achromia.

Variation in the size of the cells, without macrocytes.

The relatively slight variation in shape.

The presence of oval cells.

The presence of polychromatophilic red cells, which are usually achromic.

The blood platelets are usually up to the normal

standard, or slightly increased.

There may be nucleated red cells, depending upon the severity of the anæmia.

THE BLOOD IN HÆMOLYTIC JAUNDICE

In this affection we have icterus, with acholuric urine, and no clay-coloured stools. The colourindex is usually less than 1.0. The smear may resemble pernicious anæmia, in that there may be marked anisocytosis, and microcytes may be especially numerous. The reticulated red cells, as shown by vital staining, are increased up to 15 or 20 per cent. All the red blood cells are markedly less resistant to hæmolysis than in other forms of anæmia. Instead of hæmolysis beginning at about 0.44 per cent salt solution, and being complete at from 0.34 to 0.36 per cent, it may begin at 0.7 per cent and be complete at 0.46 or 0.50 per cent.

THE BLOOD IN LYMPHOID LEUKÆMIA

Nearly all the leucocytes seen are lymphocytes. In chronic lymphatic leukæmia they resemble the types seen in normal blood. In acute lymphatic leukæmia the lymphocytes are large, and usually exceed greatly in size the cells of normal blood. Their protoplasm is often abundant. The nuclei may be indented or lobulated.

The red cells usually show the appearance of a greater or less degree of anæmia. This is usually quite marked in the acute form. The white cell count may be about 100,000 per c.mm., in the acute form, and as high as 600,000 in chronic cases. The blood platelets are reduced in number.

THE BLOOD IN MYELOID LEUKÆMIA

The striking change in this affection is the increase in leucocytes. In a large series of cases the average was 298,700 per c.mm. The in-

crease is in all forms. The polymorphonuclear neutrophiles make up 30 to 50 per cent. The small and large lymphocytes are increased. The eosinophiles and the "mast" cells show both a percentage and an absolute increase. The abnormal cells, the myelocytes, range from 30 to 50 per cent. Normoblasts and megaloblasts are common. The red cell count may be normal, but sooner or later anæmia sets in. This may be severe. The colour index is low. The blood platelets are increased.

THE BLOOD IN CHRONIC LEAD POISONING

There is usually a moderate grade of anæmia of the secondary type. The red cells do not often fall below 2,500,000 per c.mm. The characteristic feature is the basophilic degeneration, or stippling, of the red cells. This stippling may be present even when the anæmia is slight, and is of considerable aid in diagnosis.

THE TECHNIQUE OF BLOOD CULTURING FOR TYPHOID FEVER

The blood is usually positive for *B. typhosus* during the first week of infection.

Obtain ox-bile. Put 5 c.c. into a test-tube and sterilize. Sterilize the anterior surface of the left forearm with an alcohol sponge. Have a sterile needle and syringe. Apply a tourniquet to the upper arm and have the patient close his fist. Take the most prominent vein in the sterilized area of the arm and puncture with a needle. Draw off 5 c.c. Under aseptic precautions, such as flaming the tube, etc., pour into the bile in the test-tube 2 c.c. of blood; cork and mix gently. The test-tube then has to be incubated. Save the remainder of the blood for the Widal test.

TECHNIQUE OF THE WIDAL TEST

This test is usually positive after the first week of infection. Take the remaining blood from syringe, and either let it stand in a test-tube, or centrifugalize it. When the serum has appeared on top of the blood-clot, take a drop and mix with 19 drops of normal saline solution, = a 1 in 20 solution. Take 10 drops of 1 in 20 solution, and mix with 10 drops of normal saline, = a 1 in 40 solution. Now mix one drop of the 1 in 20 solution with one drop of B. typhosus culture on a cover-slip and fix on a hollow slide, = a 1 in 40 solution.

Take one drop of 1 in 40 solution and one drop of *B. typhosus* culture, and prepare as above, = a 1 in 80 solution.

Mix one drop of *B. typhosus* culture with one drop of normal saline as control. Watch under high power microscope. If positive, the 1 in 40 and 1 in 80 solutions should show agglutination of organisms and cessation of motility within one hour. The control should still show actively motile organisms.

TECHNIQUE FOR OBTAINING BLOOD FOR VARIOUS TESTS OF THE CHEMICAL CONSTITUENTS

OF THE BLOOD

The following constituents of the blood are the ones most usually determined:—

Urea (In nephritis or cardio-renal disease, in obstruction, intestinal or prostatic.) Creatinine. Calcium (in tetany). Uric acid (in gout). Sugar (in diabetes).

Obtain blood by the method described for bile cultures. Do not leave the tourniquet on for longer than one minute.

Have a large-sized test-tube, containing 20 mg. of calcium oxalate, or 20 mg. potassium citrate, per 10 c.c. of blood.

For ordinary routine tests, urea, creatinine, and blood-sugar take at least 10 c.c. of blood.

Pour into a test tube and shake for 2 or 3 minutes. This will prevent the blood from clotting and allow for the preparation of a protein-free filtrate on arrival at the laboratory.

When estimation of the blood-sugar is desired, the blood should not be allowed to stand any longer than is absolutely necessary, as the sugar content will be increased, due to cell autolysis. To preserve, use 1 m. of formalin per 5 c.c. of blood.

The normal readings for the various substances are as follows:—

THE ACTION AND USES OF OVARIAN EXTRACTS*

By W. E. DIXON, M.D., F.R.S.

From the Pharmacological Laboratory, Cambridge

The endocrine function of the ovary may now be regarded as established. Krauer showed in 1900 that this organ was intimately connected with cestrus and that ovarian grafting could at least partly antagonize the effects of spaying. This ovarian action is evident in both sexes. If a portion of an ovary is grafted into a castrated male, the mammary glands and teats hypertrophy, the glands secrete, and the animal resembles a pregnant female; a condition obtains which Steinach salls hyperfeminization. In the male the development of the mammary glands is uninterrupted, the Graafian follicles mature but do not rupture, but the implanted ovaries

It is also well recognized that the ovary does not function till puberty and that the essential features of puberty are caused by some internal stimulus. A young ovary engrafted into an adult male or female will begin its secretion sooner than its age warrants, whilst an adult ovary engrafted into a young animal will not function until the animal reaches maturity. The stimulus to ovarian function can only be obtained through the mature tissues, whether male or female. This fact is of great practical importance, since in cases of infantilism it is not necessarily the ovaries which are primarily at fault, and ovarian transplantation will not necessarily improve the patient, although, as no doubt will be shown in this discussion, even in these cases ovarian hormones can produce a sexual cycle.

The literature contains plenty of examples of the beneficial effect of ovarian transplantation, both in men and animals. Thus, a bitch, aged 17 years, after an endoperitoneal transplantation showed rejuvenation, sexual activity, and gave birth to five normal puppies. Bell analyzes 118 cases of ovarian grafting, and states that menstruation was possible in 107 of these and occurred in 71; Sedukoff transplanted an ovary into a horn of the uterus in two sterile women and obtained normal menstruation.

The present discussion has as its object the determination of how far it is possible to substitute normal ovarian function by ovarian hormones. It should be mentioned here that menstruation is not the same as œstrus, and experiments on lower animals cannot necessarily be referred to man without qualification. Another point to which reference is necessary is the quality of the various extracts at present on the market: different manufacturing firms make their preparations often by very different methods. The ovary differs from other organs from which extracts are made in that it functions in a cyclic manner. I propose to show that its extract may exhibit different properties according to the stage of the cycle. Manufacturers, however, so far as I know, take little account of this fact. Again, the medical practitioner who uses extracts of ovary administers them in various ways-intravenously, subcutaneously or orally. These two variables must be held responsible for some of the failures and general lack of uniformity in clinical results.

soon pass into cystic degeneration. In the female the development is slower and shows a rhythm which is apparently associated with the development of the Graafian folliele, and in the regressive phase with its rupture and the formation of the corpus luteum. Loeb has advanced evidence for believing that follicular development is governed by the corpus luteum.

It is also well recognized that the overy does

^{*} Abstract of the opening paper of a discussion in the Section of Therapeutics and Pharmacology at the Annual Meeting of the British Medical Association in Edinburgh, 1927, Brit. M. J., Dec. 10, 1927, p. 1070-73.

stances can be obtained.

Estrin.

Estrin is the hormone which is most definite and most readily prepared; when it is injected subcutaneously into spayed rats and mice it produces typical æstrus with normal sex instincts, and when injected into immature animals it induces puberty. Like other hormones, such as adrenaline and thyroxine, cestrin is of the same nature in all animals.

The hormone is probably produced by the Graafian follicles at one stage of the ovarian eycle, the concentration in the ovary being least in the post-menstrual period and greatest just before menstruation. It is present in the wall and fluid of the ripe follicles. In pregnancy it is also present in large amounts in the placenta and the blood; in pregnant women it can be detected with certainty in the blood from the eighth to the tenth month. In other women it may also be detected in the blood about fifteen days before the onset of menstruation; it increases in amount till menstruation appears, when it may be detected in the menstrual blood, though not in the circulation.

Injections of æstrin into spayed animals produce all the characteristics of a heat period. When the concentration of hormone is maintained continually and in sufficient amount a continuous æstrus results. The uterus enlarges and the increase in weight of the virgin rabbit's uterus within a few days of administration of the hormone forms a qualitative test of activity. This hormone also promotes the building of endometrium. Menstruation is due to the cessation of the influence of this hormone, and, therefore, to obtain an emmenagogue effect in women the injections should be interrupted at suitable intervals. On the other hand, animals can be kept sterile by continuous injections.

As æstrin exerts this remarkable action it might well be that injections into pregnant animals by bringing on œstrus would cause abortion. Margaret Smith found it was possible to interrupt pregnancy in rats during the first five days by injecting æstrin, but that it was not possible after the fifth day. Parkes and Bellerby, in mice, found that even in the later stages injections in sufficient amounts will nearly always terminate pregnancy.

Some observations have also been made on women and monkeys after ovariectomy. Oestrin promoted the growth of the uterus. In monkeys menstruation occurred when the injections ceased; in women the "subjective symptoms" of menstruation only occurred, but no bleeding approximating to that in normal menstruation.

Before leaving this hormone it should be noted that evidence exists for supposing that

From the ovary at least three different sub- the production of estrin is influenced by the anterior lobe of the pituitary gland.

Corpus Luteum Hormone

A large mass of experimental observations shows that the corpus luteum is concerned with the rhythm of the estrus cycle and with the prevention of ovulation; also it is known that a persistent corpus luteum, both in animals and women, will produce sterility, a condition which is cured by its removal. The presence of fully formed corpora lutea inhibits ovarian secretion. and this condition obtains in animals for a time between the heat periods and more particularly during pregnancy. In women there is plenty of pathological evidence to show that functional corpora lutea are not present during menstruation.

If the corpora exert this controlling action on ovarian function, then their removal should release the normal ovarian function. Removal of the corpus in animals, rabbits (Fraenkel), goats (Drummond Robinson), etc., during pregnancy is invariably followed by abortion. On the other hand, injections of properly prepared corpus luteum prevent ovulation. Pearl and Surface found this for the hen. Kennedy for the rabbit. Papanicolaon also finds that corpus luteum inhibits and delays ovulation and estrus in the guinea-pig. One other effect can be induced by these injections—namely, hypertrophy of the breasts, and, during pregnancy, growth of the maternal portion of the placenta. Shaw has shown that the corpus luteum is mature in women on the nineteenth day and persists till the twenty-seventh; during menstruation it is degenerate. He also thinks that it is responsible for the production of the premenstrual changes and of the decidua if pregnancy occurs.

Clinically, treatment with extracts of corpus luteum has been disappointing, and it is easy to understand the reason. These glands are only functional at one period in their cycle; the degenerated corpus is inactive. Few manufacturers are likely to have assistants sufficiently skilled to make this distinction. Nevertheless, remarkable clinical results have been claimed for this form of therapy, and many cases are on record of women who habitually aborted going to full term when treated with corpus luteum extracts.

Interstitial Hormone

The third substance which can be prepared from ovarian extract was described by Marshall and myself. This substance is water-soluble and thermo-stable, and can be prepared from the ovary, at one stage of its cycle only, by maceration with warm saline followed by boiling and filtering. The injection of this substance into animals causes a secretion of the posterior lobe of the pituitary gland, and this in turn renders the uterus supersensitive and highly responsive to other forms of stimulation.

The pituitary secretion passes either entirely or mainly into the cerebro-spinal fluid. Histological examination has shown that the gland is suspended in a bath of the fluid and has an opening in communication with the ventricles. Since the experiments of Marshall and myself this secretion of pituitary into the cerebrospinal fluid has been confirmed many times, more particularly by Trendelenburg, Janassy and Horvath, and Miura, and there can now be little reasonable doubt of this fact. It has been suggested that the secretion of oxytoxic substance is not really pituitrin, but some other substance, and to this it can only be replied that it exerts every known chemical and physiological action of posterior lobe extracts. In my Dohme lectures I gave the last piece of evidence in this respect by showing that it also exerts the melanophore dilator action on the frog, an effect which, so far as I know, is quite specific. Trendelenburg has also described

The pituitary gland must be intimately connected with the phenomenon of pregnancy, because statistics show that the size and weight of the gland in men and nulliparæ are about the same. In primiparæ the weight has increased by about 50 per cent, and in multiparæ by about 90 per cent, though most of this increased weight is due to the anterior lobe.

The posterior pituitary substance has at least three actions of importance in medicine; it inhibits the secretion of urine, it has an antagonistic action to the insulin effect, and it sensitizes and, in large doses, contracts plain muscle on the uterus. This latter action is so profound that it overshadows all the other muscular effects, and pituitrin may be said to have a true specific action on uterine muscle in rendering it supersensitive to every form of extraneous stimulus.

Our experiments showed that in only one stage of the ovarian cycle was this hormone elaborated-namely, at the stage of degeneration of the corpora lutea. So long as these corpora are functioning they govern the metabolism of the ovary, and neither the æstrin nor pituitary hormones are free to act, but when the corpora degenerate both are liberated and exert their effects-that is to say, extracts of the ovary made between the heat periods or during pregnancy are without effect on the pituitary gland, but extracts made just before the heat period or just before parturition induce secretion of the gland. As the significant action of pituitary extract is to sensitize the uterus it is difficult, if not impossible, to avoid the conclusion that these two phenomena are closely associated. It is true that insulin also causes the pituitary to secrete, but this cannot be of importance in these experiments, since the blood sugar in anæsthetized animals, into which the ovarian extracts are injected, is invariably increased as a result of the anæsthetic.

The facts are, then, that the ovary just before parturition and just before the heat periods contains a hormone which causes the pituitary gland to secrete. It is well known that substances introduced into the cerebro-spinal fluid find their way almost immediately into the blood, and hence it should be expected that extracts of blood of pregnant rabbits at the time of delivery should contract the uterus, which has been found to occur. Similarly the blood of women collected at the time of delivery contracts the guinea-pig's uterus to a considerably greater degree than normal blood. The same effect was shown by Mayer in a different way. He collected the cerebro-spinal fluid from women during Cæsarean section. This fluid he injected subsequently into ten women with deficient labour pains. In eight of the women pains were induced, which in four were followed by the birth of the child. In another case an intradural injection was made, which was followed by labour pains within twenty-four hours. Mayer states that the cerebro-spinal fluid in labour contains the active principle of the pituitary responsible for the production of uterine contraction.

All these experiments consistently support the view that in the presence of fully formed corpora lutea the normal ovarian secretion is held in abeyance, and this is the condition for a short part of the time between the heat periods, but more particularly during pregnancy. In other words, the corpus luteum may be supposed so to dominate ovarian metabolism at these periods that the ovarian secretion, which at other times activates the pituitary, is inhibited or else is neutralized by the secretion coming from the corpus luteum. At the close of pregnancy, when the corpora lutea are in an advanced stage of involution, the normal secretory activity is once more produced, and the pituitary gland is excited to secrete in greater quantity. When the threshold stimulus of the pituitary secretion upon the uterus is reached the pains of labour set in and parturition results. The well known phenomenon of the growing irritability of the uterus in the later stages of pregnancy, which is the typical effect of the pituitary action, is explained as being functionally correlated with the involution of the corpus luteum. In our experiments ovarian extract gave positive results at all times excepting when the organs contained well developed corpora lutea, but the effects produced were undoubtedly more marked in the case of the ovaries obtained at or about the time of labour. The hormone which stimulates

the pituitary gland is produced in greatest abundance at these periods.

It is not suggested that the ovario-pituitary endocrine mechanism is the sole factor in producing labour pains. No doubt the fœtus itself acts as a direct stimulus, and without the fœtus the intense muscular contractions would not occur, but it seems equally clear that the onset of labour cannot easily be accounted for without postulating some further exciting cause apart from the fœtus and uterus.

In conclusion, no romance can be more remarkable than the fact that doctors, by using pituitary extract to stimulate the uterus in pregnancy, even to the exclusion of ergot, should have adopted the method which Nature has herself employed from times immemorial.

Dr. A. S. Parkes (London) discussed the interaction of the estrus-producing stimulus with the corpus luteum, and the function of the corpus luteum in maintaining pregnancy. There was much definite evidence that one function of the persistent corpus luteum was the inhibition of estrus and ovulation during pregnancy, and in the last few years it had been found possible to simulate this action by inhibiting estrus and ovulation in the normal animal by the injection of extracts of corpus luteum. Since it was possible to override the estrus-inhibiting power of the persistent corpus luteum by the injection of the æstrus-producing hormone, the conception was suggested of an alternating dominance of æstrus producer and æstrus inhibitor, it being possible to override each in its normally dominant phase by the artificial augmentation of the other. As regards the function of the corpus luteum in maintaining pregnancy, many experiments on the elimination of the corpora lutea had shown that the corpora were necessary during at least the greater part of gestation. These experiments had, however, not been entirely conclusive. To eliminate the corpora lutea double ovariotomy or manipulation of the ovary during the operation had always been employed. The latter operation was of necessity attended by a considerable operation shock, while the former abolished all ovarian activity. To overcome these difficulties the following technique had been devised. Young mice were sterilized unilaterally by x-rays, and the animals when adult thus possessed one normal ovary containing both Graafian follicles and corpora lutea, while the other ovary had neither, but was capable, as already shown, of performing all ovarian endocrine functions except those associated with the corpora lutea. The animals were then allowed to become pregnant, and at various stages of pregnancy one or other ovary was removed. Animals in which the ovary removed was that containing the corpora lutea invariably aborted or reabsorbed the fœtuses, while those in which the sterile ovary was removed had in every instance an uninterrupted gestation. With any possible operation shock thus controlled, these experiments had seemed to show definitely that in the mouse, at any rate, the presence of corpora lutea was essential for the normal progress of pregnancy. As regards the light thrown by these experiments on the mechanism of parturition, it was very doubtful whether the normal atrophy of the corpus luteum towards the end of pregnancy could be compared with its experimental elimination earlier. There was much evidence which seemed to show that an ovarian-pituitary parturition mechanism was set in motion by this normal atrophy of the corpus luteum, but in view of the relative insensitivity of the uterus to pituitrin during early pregnancy, it was probable that the abortion which followed early removal of the corpora was not dependent upon such a mechanism.

THE REPORT OF THE WORK OF THE CANCER COMMISSION FOR THE YEARS 1923 TO 1927*

(IN ABSTRACT)

The Health Committee, in 1923, decided that from the international point of view there might be advantage in looking into the official figures of mortality from cancer as a whole, and particularly of cancer of certain sites of the body, which have been furnished over a long series of years in certain European countries. England and Wales, Italy, and Holland, were taken as specially suited for these comparisons, but auxiliary and confirmatory data from Switzerland and other nations in Europe, and for some purposes from America also, were laid under contribution. The investigation was made by a Commission of members of the Health Committee, with the assistance of statistical, clinical and other experts, as well as of the Secretariat of the Health Section of the League. results promise to be of value both directly and indirectly. Directly, they relate chiefly to cancer of two sites, the breast and uterus. which were chosen because fatal cancer of these organs is less likely than cancer of other sites to pass undetected or to be inaccurately reported as the cause of death. The Commission find that even when they have limited their consideration to these sites, and deal solely with countries for which, over a long period of years, the national system of certification of causes of death has been well established and in many ways perfected, sources of error exist which seriously affect the proper comparison of the

 $^{\ ^*}$ League of Nations publication III, Health, 1927, iii, 17.

death rates in one country and another, and even in one part of the same country and another part. Much valuable knowledge can and should be obtained by the comparisons of cancer death-rates, but the Commission has found that in every one of the countries of inquiry the certification of causes of death, in relation to cancer, is more or less unsatisfactory. There is, in particular, great irregularity in the observance of the rule that cancer deaths should be referred in statistical statements to the primary site, and not to the secondary growths to which the final fatal result has ultimately been due. There is, in the Commission's opinion "urgent need for investigation, in all countries possessing an organized service of statistics of the causes of death, to determine exactly the degree to which certification by causes is unsatisfactory, and how its scientific value may be improved.

The Commission with the aid of a distinguished anthropologist, Dr. E. Pittard, and an eminent statistician, Dr. Niceforo, made an effort to determine whether there was a relation, in Europe, between cancer-mortality on the one side and race as judged by anthropometric characters on the other. The inquiry produced an invaluable monograph on the known facts regarding the anthropological characters of different regions, but the anthropometric data, even more than the mortality data, proved to be too defective, and the Commission has sadly to record that its efforts show "how much must yet be done before attempts to appraise "racial" elements in the prevalence of disease can be successfully under-

The direct results of the inquiry however have been by no means all of a negative kind. In each of the countries concerned, national expert work was undertaken to ascertain the circumstances in which so many deaths from cancer, presumably preventable in large measure by early diagnosis and by early surgical (or radiological) intervention, were occurring. Special investigation was made of sample series of cases of cancer of the breast and uterus at particular hospitals and in selected areas, as well as of the massed figures for the country as a whole. The results obtained cannot fail to give a very considerable impulse and encouragement to the efforts which are being made in many quarters to organize a system of medical and hospital service, and of popular instruction, which will in fact prevent a large loss of life, and the occurrence of a still larger amount of avoidable

individual suffering. The notable conclusion is reached by the Commission that when all national differences are allowed for, it is demonstrated everywhere that, on the one hand, early operation is a far more successful measure than even the general body of the profession suppose, and, on the other hand, that the frequency of resort to operation remains "deplorably low." This opinion, in one form or another, has often been expressed before, but the value of the Commission's conclusion on the point is its authority, derived from a large and recent series of cases specially studied for the purpose and critically and judiciously analyzed. It is well thus to be reminded that while we are waiting for new knowledge on the ultimate causation of cancer, or an specific remedies to cure cancer, we have already before us a sphere of immediate practicable action which, in respect of these sites of cancer at least, is capable of reducing death and suffering from cancer to a far lower level than at present obtains. In regard to the influence of fertility, they find, from the experience of all the countries, that a fertility below the normal for the particular nation is associated with increased liability to cancer of the breast, while cancer of the uterus is to be associated not so much with fertility itself or with the number of pregnancies, but specially with the occurrence of a first pregnancy. The Commission lays stress on the evidence that cancer of the cervix is connected with conditions of labour, particularly in primiparæ, which are in some measure preventable by the efficient management of the labour.

Indirectly, the investigations of the Commission have been found valuable in each country in which they were pursued by helping to open up a comparatively new line of cancerresearch, which may be called "field work" or "team work." The questions at issue have required that in each country clinicians, surgeons, health administrators, and statisticians, should be brought together for consultation, and to arrange for the suitable selection of cases, the determination of after-histories of operation cases, and the assessment of results. This cooperation has in some cases been central, and related to the country as a whole, in other cases local, in connection with a particular communal area or a particular hospital. But in every ease it has been fruitful, and the Commission urges that the organization of group-studies of this kind should be extended to other countries. and applied to all sites and varieties of cancer.

Men and Books

MEDICAL LICENSURE AND MEDICAL BOARDS IN UPPER CANADA*

By H. B. Anderson, M.D.

Toronto

During the French regime that part of Quebec which later became Upper Canada was a primeval wilderness, inhabited by Indian tribes, often at war, and at times decimated by epidemics. The interests of the French were confined to exploration and discovery, the fur trade, barter, and the heroic efforts of the Jesuit missionaries to minister to the spiritual and physical needs of the Indians. To safeguard these interests against the aggression of hostile Indians and the English colonists to the south, they established forts at strategic points along the Great Lakes: Michilimackinac (1671), Frontenac (1673), Niagara (1678), Pontchartrain (1701),† Rouille (1749),‡ and other outposts. Fort Rouille was built at the mouth of the Humber (its site now being marked by a monument in Exhibition Park), to protect the overland trade-route between the Georgian Bay and Lake Ontario. There was no organized government in this vast territory during the French regime, such control as existed being military and from Quebec.

After the capitulation of Quebec in 1759, the country passed under the military administration of the English. The Treaty of Paris (1763), which ended the Seven Years' War with France, stipulated for the fullest rights and privileges to be accorded to the Roman Catholic religion in Quebec, but otherwise English law and procedure came into force.

By Royal Proclamation provision was made for a Governor-General and an Executive Council of twelve members chosen from among the inhabitants, and the Executive Council and Governor were endowed with legislative, executive, and judicial functions.

The French, discontented under British laws and administration, agitated and petitioned for restoration of their civil rights under the old Canadian (French) law (The Custom of Paris). The Imperial Parliament, disturbed by the revolutionary developments in the American colonies, and anxious to appease the discontent in Canada, yielded to the agitation by passing the Act of 1774, afterwards commonly known as the Quebec Act. In addition to restoring the

old French Civil Law and Customs in Canada, the Act of 1774 enlarged the boundaries of Quebec southward to the Ohio and westward to the Mississippi.

The English inhabitants protested against the imposition of French Laws as vigorously as the French had opposed the English system. With the settlement of some ten thousand United Empire Loyalists along the north bank of the St. Lawrence, Lake Ontario, Lake Erie, and about Lake St. Clair, following the recognition of American Independence in 1783, the claims of the English-speaking inhabitants for administration, according to English law and procedure, were vigorously pressed upon the Imperial Government, and finally led to a Royal Proclamation in 1791 dividing Quebec into two Provinces-Upper and Lower Canada. The object was to appease public discontent by providing a Government acceptable to the French majority in Lower Canada and to the English majority in Upper Canada. The representative of Royal authority, under the Constitutional Act of 1791, was the Governor-General, who was also Captain-General of the Imperial Forces in Canada, resident in Quebec. Under the terms of the Act, each Province was to have a Lieutenant-Governor, a parliament elected by the people, and a legislative council appointed by the Lieutenant-Governor, representing the Crown.

It should be clearly understood that representative Government did not exist in Canada in the period from 1763 to 1791. This is commonly known as "The Executive Council Period." That body was empowered by the Imperial Government to promulgate laws for the government of the country, and these are commonly known as "Quebec Ordinances".

In 1785, for instance, there was "An Ordinance Concerning Advocates, Attorneys, Solicitors, and Notaries, and for the more easy collection of His Majesty's revenue." Under this Ordinance, provision was made for the qualification of lawyers and for the control of the administration of law. In 1788, another Ordinance was passed to prevent unqualified persons practising physic and surgery, and sought to provide for the proper control of medical practice.

At the time when Upper Canada was constituted a separate Province under the Constitutional Act of 1791, and Colonel John Graves Simcoe was appointed the first Lieutenant-Governor, the total population was about 12,000, the chief centres being at Kingston, Newark (Niagara-on-the-Lake) and Amherstburg, although, as before mentioned, there were scattered

^{*} Read before the Academy of Medicine, Toronto.

[†] Established by Sr. La Mothe-Cadillac at Detroit. ‡ Called after the French Foreign Minister and Secretary of State.

settlements along the St. Lawrence and the Great Lakes as far as Detroit. There were garrisons at Kingston, and also at Fort Niagara across the river from Newark, and at Detroit, for it should be remembered that the latter posts remained in British possession until they were ceded to the Americans by the Jay Treaty in 1796.

In the earliest settlements, the people received medical attention from the medical officers of the garrisons, who had the right to practice by reason of their qualifications from the Imperial Government. The influx of population and the spread of settlements following the close of the American Revolution, soon made it impossible for the military surgeons to attend to the needs of the settlers, especially at a distance from the garrisons. It is important to note that no doctors accompanied the Loyalists, who first settled in what is now the Province of Ontario. The dearth of properly qualified men was the occasion for the springing up of many irregulars and quacks without education or medical training.

The first step toward regulating practice, as before mentioned, was in 1788 when the Governor and Executive Council at Quebec passed "An Act or Ordinance to Prevent Persons Practising Physic and Surgery, etc.," and the preamble to this Ordinance states the reason for the legislation: "Whereas many inconveniences have arisen to His Majesty's subjects in this Province* from unskilful persons practising physic, etc." It was therefore provided under penalty, including fine and imprisonment, that no person should practice medicine without a license from the Governor or the Commanderin-Chief of the Province, upon certificate of examination and qualification by an examining board appointed for the purpose by the Governor or the Commander-in-Chief. University graduates in medicine, and commissioned or warranted army or navy surgeons were excluded from the necessity of examination.

The first legislation to regulate the practice of medicine in the newly-established Province of Upper Canada was enacted by the Legislative Council and Assembly of the Province at Newark (Niagara-on-the-Lake) in 1795, and was entitled "An Act to Regulate the Practice of Physic and Surgery". This Act provided for the appointment of a Board of Surgeons to examine and approve for license to practise in the Province, under the hands and seal of the President of such medical board and the members thereof present at the prescribed examinations. This Board was to be appointed by the Governor,† Lieutenant-Governor,‡ or a

This Act was found to be unsatisfactory and was repealed in 1806. There are no records of the proceedings of the Board constituted under it. As a concession to public opinion, the selling of medicines and the taking of men as apprentices were not prohibited by the Act of 1806.

In 1807 a Bill was introduced into the House to regulate the practise of medicine in the Province, but was dropped, and until 1815 the only legislative control was apparently under the "Quebec Ordinance of 1788", which again became operative.

That more efficient control was considered necessary is evident from the following quotation from an editorial in the York Gazette, October 8, 1808:

"The opinion we maintain of such a public want arises from the conviction we feel, and the knowledge we possess, that the health, nay, frequently the existence of a fellow-creature, is lost, being too often sacrificed to the pretensions or cannibal ignorance of empirics, quacks and impostors. It is an incontestable fact that we are all created patients, but few of us are born physicians, and that education and studious practice, as well as a just judgment of diagnostics and the efficient operative qualities of prescriptions, form the necessary parts of fortunate and conspicuous practitioners."

Editorials and letters in the contemporary press, by Bishop Strachan and others, urged the necessity for action. Consequently, in 1815, the Legislative Council and Assembly of the Province passed "An Act to License Practitioners in Physic and Surgery". This Act was practically the same as the one repealed in 1806. It was, however, provided that nothing in the Act be construed to prevent "any female from practising midwifery in any part of the province" — another concession to public opinion.

This Act was soon repealed, the preamble to

person authorized by him, and was to be composed of the surgeon* to His Majesty's Hospital for the time being, with the surgeons† of His Majesty's Regiment‡ doing duty in the Province, and all other authorized surgeons and practitioners, or any two of them, of whom the surgeon to His Majesty's Hospital must be one. A penalty of £10 was imposed for practising physic, surgery, or midwifery, or for selling medicine without a license. Army and navy surgeons, university graduates, and others having the right to practise under previous enactments, were exempt from examination. Apprentices of the latter were excluded from the right to present themselves for examination.

^{*} Old Quebec, including the territory later known as Upper Canada.

t Lord Dorchester.

Colonel John Graves Simcoe.

^{*} Dr. James Macaulay, who was appointed as Deputy-Inspector General of Hospitals in 1802.

[†] Dr. James Macaulay and Dr. John Gamble. The latter succeeded Dr. David Burns, who was surgeon's mate for a short time.

the Queen's Rangers.

the new Act stating: "The provisions. The have been found to be impracticable". reason why these early enactments were impracticable becomes obvious if we consider the conditions under which their operation was attempted—the small population, great distances, scattered settlement, and few qualified practitioners. The army doctors, under whose control were placed the examining and licensing of candidates, were themselves acting under a dual authority-the garrison-surgeons being answerable to the Governor and Commanderin-Chief at Quebec, and the Medical Officers of the Queen's Rangers (an independent regiment for service in the province only) being under the Lieutenant-Governor. Thus Dr. James Macaulay, whom Colonel Simcoe appointed surgeon to the Queen's Rangers, was on the army list as Deputy-Inspector General of Hospitals, and in this capacity was answerable to the Commander-in-Chief at Quebec. The conflict of authority between Lord Dorchester and Colonel Simcoe was a cause of continual disagreement, and finally led to the resignation of both.

Another difficulty arose from the dearth of properly qualified doctors, due to the inability of the scattered settlements to attract their services or properly support them. In these circumstances, the settlers had of necessity to rely on such services as were available, and naturally they resented the penalizing of those from whom they obtained medicines, or who attended them in accident or sickness, when licensed practitioners were not available. Thus, Gourlay, the Scottish agitator, voiced the grievances of the people when he advocated that medical practice

should be free to all.

Eventually an Act was passed in 1818 providing for the Governor, Lieutenant-Governor, or person administering the government, to constitute and appoint an Examining Board, afterwards known as the Medical Board of Upper Canada; to consist of five or more persons legally authorized to practise physic, surgery and midwifery; any three to be a quorum; on the certificate of two or more of the Board, the Governor-General, Lieutenant-Governor, or Administrator might license to practise. It was further enacted that the Board should meet in the town of York twice yearly. At a later date, quarterly meetings were provided for. Dr. James Macaulay became first chairman of the Medical Board of Upper Canada, and held the post until his death in He was succeeded by Christopher Widmer, who continued as chairman of the Board until his death in 1856. The first meeting of the Medical Board was on January 4, 1819, those present being James Macaulay (chairman), Christopher Widmer, William Lyons, and Grant Powell (secretary). The

first candidate granted a license was John Gilchrist, a graduate of Dartmouth, N.H., who afterwards successfully practised for many years at Keene, Peterborough County.

The creation of the Upper Canada Medical Board by the Act of 1818 was the beginning of effective control of medical practice in the Province. It will be noted that up until this time not only the practice, but the regulation and administration of medical affairs generally in the Province, were under the control and direction of the military surgeons. The rapid increase of population had made medical practice more lucrative, and after the Napoleonic wars and the War of 1812 there was a large influx of well qualified practitioners, both military and civilian. As late as 1826, however, Dr. Strachan stated that more than three-fourths of the doctors had been educated or had attended lectures in the United States.

In 1827 an Act was passed providing for the registration of previously qualified practitioners, as follows :--

"Upon the application of any person exhibiting a diploma or license as physician or surgeon, from any university in Her Majesty's dominions, or from the Royal College of Physicians or of Surgeons in London, or a commission or warrant as physician or surgeon in Her Majesty's naval or military services, and producing an affidavit made before any judge of any County Court in Upper Canada, stating that he is the person named in such diploma, license, commission or warrant, the Governor may grant to such applicant a license to prac-tise surgery and midwifery in Upper Canada."

The Medical Board of Upper Canada continued to hold regular examinations and grant licenses until 1839, when an Act of the Provincial Parliament constituted "The College of Physicians and Surgeons of Upper Canada," with full powers to examine and grant license to practise or otherwise to control medical affairs in the Province. It was claimed that this Act infringed the rights of the Royal College of Surgeons (London), and after a heated controversy it was disallowed by the Imperial Parliament. The College of Physicians and Surgeons of Upper Canada held its last meeting in 1841. During its short existence this body began to establish a medical library.

When the College of Physicians and Surgeons of Upper Canada ceased to exist, the control of the examination and licensing of practitioners reverted to the Medical Board of Upper Canada, by Proclamation of the then Governor-General, Lord Sydenham.* He appointed Christopher Widmer, William C. Gwynne, Robert Hornby, Walter Telfer, William Durie, and Henry Sullivan as members of the Board. The medical

^{*} Lord Sydenham died in Kingston in 1841 from tetanus following a fracture of the right leg received in a fall from a horse, and was buried in St. George's Cathedral.

affairs of the Province and the licensing of practitioners were controlled by the Medical Board until October 7, 1865, when the last meeting was held.

An Act was passed in 1841 which provided that any person who was or should thereafter be licensed as a physician, surgeon, or both, in either Upper or Lower Canada, should be qualified to practise also in the other Province.

The Act of 1859,* "respecting the Medical Board and Medical Practitioners," is essentially a re-statement of previous enactments.

In the same year "An Act respecting Homeopathy" was passed, making provision for the appointment of a Board of Examiners, to consist of five members. The course of study for

Homeopaths was also outlined.

In 1861, "An Act respecting the Eclectic System of Medicine" was passed, providing for an Examining Board and outlining the course of study. The Eclectic School was a cult of herb-doctors, the followers of Samuel Thompson, an American empiric, who published A New Guide to Health or Botanic Family Physician, at Hamilton in 1832. The Thompsonians had a considerable following in the Eastern States, especially in New Hampshire, where their founder was born in 1769 and where he practised.

In the later years of its existence, the Medical Board of Upper Canada was frequently the object of bitter criticism, and medical affairs were drifting into a chaos which demanded action. Consequently, in 1865, "An Act to Regulate the Qualifications of Practitioners of Medicine and Surgery in Upper Canada" was enacted by the Provincial Parliament. This was known as "The Medical Act for Upper Canada." All previous licensing boards were abolished, and under its authority was created "The General Council of Medical Education and Registration of Upper Canada." The Act was passed September 18, 1865, and the Council began its duties January 1, 1866. The Council was composed of one representative for each college authorized to grant medical degrees, and twelve members elected by the profession. The body created under this Act afterwards became known as "The College of Physicians and Surgeons of Ontario." This was accomplished after Confederation, under authority granted in 1869 by "The Ontario Medical Act." Medical education and practice had then passed exclusively under the control of the provincial governments. In order to obtain uniformity of examinations and control under the Ontario Medical Act, provision

The Act creating the College of Physicians and Surgeons was passed by the Legislature of Ontario in 1869. Now, the affairs of the profession in this province are regulated by the Act of 1874—"An Act to amend and consolidate Acts relating to the profession of Medicine and Surgery in Ontario."

Under this Act, "The Council of the College of Physicians and Surgeons of Ontario" is empowered and directed to enact by-laws for the regulation of all matters connected with medical education; for the admission and enrolment of students of medicine; for determining from time to time the curriculum of the studies to be pursued by them; and to appoint a Board of Examiners before whom all candidates must pass a satisfactory examination before they can be enrolled as members of the College, and thus be legally qualified to practise their profession in the Province of Ontario.

The Council, moreover, had power and

was made for the admission not only of regular practitioners but of eelectic and homeopathic practitioners who had been in practice before The eclectic and homeopathic bodies were each to have a fixed representation of five members on the Council, and the regular profession twelve. This was brought about by agreement between homeopaths, eclectics and regular practitioners regarding the repeal of the Acts of 1859, 1861 and 1866, under which, respectively, they had obtained legislation empowering them to examine and grant licenses to practise in the Province. It was by this agreement that the way was cleared for the passing of the Ontario Medical Act, providing one door of entrance to the practice of medicine in the province. Each medical school or university with a medical faculty in the province was given a representative on the Council of the College of Physicians and Surgeons. "The College of Physicians and Surgeons of Ontario" is the name adopted by the medical profession of the Province of Ontario in its corporate capacity. A Board of Examiners was to be appointed by the Council, one from each medical teaching body, and nine from other members of the college. The homeopaths and eclectics were to have their own examiners in certain distinctive subjects, as materia medica, and therapeutics, medicine, etc., but were required to pass the same examinations in the preliminary subjects. in the fundamental sciences, and in other medical studies as were demanded of all candidates. Every legally qualified medical practitioner in the Province of Ontario is a member of the college. It is not an institution for the teaching of medicine, but for outlining the curriculum, examining, registering, disciplining, and otherwise exercising a general control of the medical profession of the province.

^{*} Sir James Buchanan Macaulay, first Chief Justice of the Court of Common Pleas (established 1849), son of Dr. James Macaulay, was chairman of the Commission which revised the Statutes of Upper and Lower Canada, and of the Statutes of Canada after the Union of 1841. The Medical Act of 1859 apparently was due to this revision of the statutes.

authority conferred upon it to fix the terms upon which practitioners of medicine, duly qualified in other countries, may be admitted as members of the College of Physicians and Surgeons of Ontario, this being the only way in which such graduates can become legally entitled to practise their profession in this Province.

The Act of 1874 provided that the eclectic representation on the Council was to continue for five years, but no successors were to be appointed, so this cult gradually died out.

The Ontario Medical Act underwent a further revision in 1887, providing for each university in the province to have a representative on the Council; since that time no important changes have been made. Other amending Acts were passed in 1891, 1893, 1895, 1902, 1914, and 1915, to make provision for matters of minor importance, but the general terms of the Ontario Medical Act remain unaltered. The Act of 1893 increased the territorial representation to seventeen members, to be elected every four years.

I need not refer to the important Acts of 1923 and 1925, dealing with irregular practitioners, with which you are all familiar.

The purpose of the Canada Medical Act, enacted by the Dominion Parliament in 1906, largely due to the untiring efforts of the late Sir Thomas Roddick, M.D., M.P., was chiefly to make provision for:

1. The establishment of a qualification in medicine, such that the holders thereof shall be acceptable and empowered to practise in all provinces of Canada.

2. The determination and fixing of the qualifications and conditions necessary for registration, including the course of study to be pursued by students, the examinations to be undergone, and generally the requisites for registration.

3. The establishment of such a status of the medical profession in Canada as shall ensure recognition thereof in the United Kingdom, and enable Canadian practitioners to acquire the right to registration under the Acts of the Imperial Parliament known as the Medical

The provisions of the Canada Medical Act can only become operative in the provinces with and by the consent of the various provincial authorities.

Note.—The various legislative enactments bearing upon the practice of medicine in this province from 1788 until the present have been collected and copies are now in the library of the Academy of Medicine, Toronto.

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DR. GRANT POWELL

BY ROBERT WYNYARD POWELL

Ottawa

Among the earliest practitioners in Upper Canada we can record Dr. Grant Powell, who came to Toronto when it was known as Little York.

He was born in Norwich, England, in 1779, the son of William Dummer Powell and Anne Murray. His father was a Barrister-at-Law, who subsequently became Chief Justice of Upper Canada, and resided for years in Toronto.

Dr. Powell studied at Guy's Hospital with his uncle, Dr. Archibald Murray, and took his diploma from Apothecaries' Hall. Coming to America in 1804, he settled in Ballston Springs, N.Y., remaining there until 1807, when he moved to Montreal and practised there until 1812. He was familiarly known in Montreal as "The little Doctor with the Gold Spectacles." He moved west in 1812 and settled in what was then Little York. During the war of 1812 he was engaged as surgeon of the Militia at Chippewa, from which service he derived a pension of two hundred pounds per annum. It is said of him that he was not specially enamoured of the practice of medicine in muddy York, but took a keen interest in professional matters and medical polities. We understand that he took advantage of Dr. Widmer's advent to Toronto to resign what practice he had, though continuing for a time to advise old friends.

He had much to do with the creation of the original Upper Canada Medical Board, and was one of its first members, taking an abiding in-

terest in its work and proceedings.

About the year 1817, on the death of the Clerk of the Assembly, Dr. Powell was appointed to the position, and also became official Principal of the Court of Probate. About 1820 he was made Judge of the Home District Court and afterwards became Clerk of the Legislative Council, in which office he died on June 12, 1838.

His wife, Eliza Bleecker, whom he had married in Ballston Springs, two sons, and five daughters survived him. One daughter was particularly well known in Toronto, viz., Charlotte, wife of the late John Ridout, the Registrar of York. She lived to the ripe age of 93. The eldest daughter, Mrs. Seymour, died in Ottawa a number of years ago, aged 97. One son, William Dummer, Judge of the District of Hesse, died at an early age in Guelph, and his widow married Dr. Clark of Guelph, father of the late Lieutenant-Governor of Ontario, the Hon. Lionel Clark.

His other son, Mr. Grant Powell, my father, served this country in the service of the Government, retiring as Under Secretary of State in

1889. He died at Ottawa in 1904, aged 85.

The only descendant of Dr. Grant Powell who followed in his professional footsteps was Dr. Robert Wynyard Powell, who has practised always in Ottawa, and who graduated from McGill in 1876. Dr. Robert Powell still survives and was appointed the first Registrar of the Medical Council of Canada on its formation in 1912, one hundred years from the date of his grandfather's arrival in Toronto.

DR. JOHN HARRIS, 1739-1802

By W. H. HATTIE, M.D.

Halifax.

The County of Pictou, Nova Scotia, is perhaps best known for its prodigality in the production of presidents for universities. It does not boast a very ancient history. The prominence given

to the arrival of the ship Hector on the fifteenth of September, 1773, with a band of Scots settlers. accounts for the generally accepted belief that that date marked the original settlement of Pictou. The sesquicentennial of that event, celebrated with much éclat a few years ago, has perhaps served to strengthen an impression which is clearly wrong. The first actual settlement was made when, on the tenth of June, 1667, a party made up of six families from Philadelphia arrived in the three-fingered harbour. (It may interest the bibulous to know that some would have it believed that "Pictou" is derived from a Micmac word which, being interpreted, becomes "three fingers.") The leader of this party was a physician, Dr. John Harris, a native of Maryland, but of Scottish parentage. Under his guidance the colony, to which he gave the name Donegal, grew considerably, and the arrival of the "Hector" only about doubled the number of settlers on the shores of the harbour.

The records give little information relative to the professional attainments of Dr. Harris, and it is unlikely that a small band of hardy pioneers would afford him much opportunity to demonstrate medical skill. It is rather in the role of public leadership that he is known to historians.

The doctor's good wife seemingly entered heartily into his colonization scheme, for on the night of their arrival at Pictou she presented him with a son. Having thus won the distinction of being mother of the first male to be born of British parentage in Pictou, she in due time qualified for a like distinction in respect of the gentler sex. Fortune favoured her: children had been born in the interim, but they were males.

The "Philadelphia Company" had obtained a

The "Philadelphia Company" had obtained a Royal grant of a large tract of land in the counties of Colchester and Pictou, and was obligated to establish a settlement thereon. The little band which accompanied Dr. Harris represented the first effort at the fulfilment of that obligation. Dr. Harris came as the company's agent, and in that capacity served with energy and discretion. He was able, however, to venture upon some private enterprises, and in scarcely more than two years he possessed a fishing boat and a small schooner. This distinguishes him as the pioneer of the merchant shipping of Pictou, which later grew to large proportions and carried the name of the town to all parts of the world.

When the Scots arrived in 1773, a situation developed which required tactful handling. Harris had organized his community, and such officials as seemed necessary had been appointed. The Scots made their settlement in a more advantageous position than the Philadelphia company could secure, and they were quite independent of that organization. Very soon after they came the revolutionary war broke out. Harris and several of his colonists sympathized with the revolutionists. The Scots, of course, remained loyal, and when a number of the southerners took possession of a well laden vessel and endeavoured to get it away for the benefit of the revolutionists,

the Scots promptly recaptured it. Ill feeling between the parties increased, and within a short time most of the Americans moved away.

Maryland friends tried to persuade Harris to return to the place of his birth, but this he declined to do. In 1778, however, he moved to Truro where he entered into practice and soon became prominent in public affairs. Evidently, he did not allow his sympathy for the revolutionary cause to carry him too far, for he was selected to represent Truro in the House of Assembly (1779-1785). At Pictou he had been Clerk of the District; at Truro he became Clerk of the Peace, and later Judge of the Inferior Court of Common Pleas.

Little information is available relative to his work as a physician, but it is learned that he inoculated a lady for smallpox shortly before his death in 1802—the year in which Bond performed the first vaccination at Yarmouth. His magisterial position provided him with a varied assortment of duties, including the celebration of marriage. He brought certain southern customs to the home of his adoption, and always kept a few coloured slaves.

While few of those who accompanied or followed Dr. Harris to Nova Scotia left descendants who made notable impress on the life of the province, the name he bore is still prominent in Pictou and Colchester Counties. The son born on the night of the doctor's arrival at Pictou became Clerk of the Peace there and held the position while he lived. Every sheriff of Pictou has been a Harris, and, all but the first, who was a nephew, a lineal descendent of the doctor. The second sheriff was a son of the doctor. The present sheriff is of the fourth, and the deputy sheriff of the fifth generation.

The Attraction of Quacks.—The existence of pain, and the failure of medical science to cure it without trouble and expense, probably accounts for the popularity of quacks. Most people, for instance, on going to a dentist, do not ask themselves: "Will he extract it scientifically?" but "Will he extract it painlessly?" The good done to man in general by the medical profession is not usually properly considered by man in particular. And when a quack comes along, offering treatment cheap for painful diseases, the usual thought is "I'll have a shot at this treatment anyway, there's always a chance of it doing some good.'' The tragedy comes when the treatment does definite harm. Most quack treatments are too well regulated by law to do much harm in themselves, but when a person fills himself up with a hundred and one different sorts of quack medicines he stands a good chance of becoming a physical wreck. However, there is one sort of "quack" that usually does some good. He is the faith-healer. He may not do his healing by "faith," no matter what sort of "faith" he might use, but he often succeeds in putting patients in the right attitude for a cure -making them determine to be well. matter of fact, people don't need the services of a faith healer to put themselves into that attitude of mind—they can do it themselves. We do not know whether the medical profession believes microbes to be the greatest cause of disease or not. If they do, we agree with the doctors and voice our opinion that next to germs worry is the chief cause of disease. Worry causes those little ailments that make one feel so utterly miserable, and that probably cause quite a few divorces and suicides. Perhaps advocates of the simple life are considered quacks by the medical profession. We cannot imagine a doctor being so very cordial to the people who tell him that they have never been in bed or called a doctor for sixty years, more or less. But although many of them are cranks, we can learn a good deal from them. Harmful quacks advocate the use of narcotic drugs. Harmful quacks treat their patients, without summoning medical help when there is danger of death. Harmful quacks fill the mind of the credulous one with horrible worries about diseases he hasn't got. Other kinds of quack doctors are more harmless than not. The medical profession can be trusted to be progressive enough to investigate thoroughly any discoveries likely to prove useful, and university people are therefore wise enough to place no reliance in quackery, when it comes to fighting disease. And they should be wise enough to know the state of mind and body most conducive to health, without needing to seek non-medical advice along that line.—McGill Daily, Jan. 11, 1928.

E. Vedder (J. Am. M. Ass.) considers that there is a higher cancer death-rate for Filipinos than in the registration area of the United States. The diet of these people is chiefly vegetables and rice. The assumption that cancer is pre-eminently a disease of civilization is untenable.

Association Motes

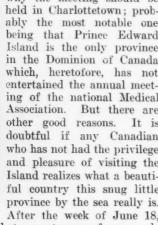
THE FIFTY-NINTH ANNUAL MEETING IN CHARLOTTETOWN, JUNE 18th TO 23rd.

be held in the City of Charlottetown, Prince are to be caught in almost all of the many tidal Edward Island. The profession in this island, rivers during the summer months, while deep the smallest province of the Dominion of Can-

This year the meeting of our Association will attracted the whole world's attention. Sea-trout sea fishing, for cod, mackerel, and haddock, may

be enjoyed at various points around the coast. The attractions are indeed alluring.

There are many reasons why the meeting should be held in Charlottetown; probably the most notable one being that Prince Edward Island is the only province in the Dominion of Canada which, heretofore, has not entertained the annual meeting of the national Medical Association. But there are other good reasons. It is doubtful if any Canadian who has not had the privilege and pleasure of visiting the Island realizes what a beautiful country this snug little province by the sea really is. After the week of June 18,



1928, it is hoped that a great many of our people from all over Canada will know something about it, and to know it is to appreciate it.

The programme which is now in course of preparation is being designed primarily for the general practitioner. There will be something,



Legislative Buildings, Queens Square, Charlottetown

ada, but one of the loveliest, has extended a warm invitation to the profession throughout the Dominion to meet in its city. At the same time the executive committee of the Medical Society of Nova Scotia and the president and executive of New Brunswick have both issued

notices postponing their meetings from their usual date in June until some time in September, in order that there may be no interference with the success of the meeting of the Association, which takes place during the week beginning June 18th. At the time of our annual meeting the island promises to be a garden of great beauty, with mile after mile of sandy beaches suitable for bathing, separated by rocky headlands of surpassing loveliness. The island is the world's headquarters of silver fox ranching. It was here the problems of domestication and breeding of the black fox were solved, and its great development has



Golf House and Golf Links at Charlottetown

100, of interest to the specialists in every line. the attendance will come from the Maritime most delectable character. Let every member

doing their level best by way of careful planning It is expected that by far the largest part of to provide a physical and mental menu of a

> decide now to be in Charlottetown for the week of June 18, 1928. Of course all members will be welcome if they come alone, but they will be doubly welcome if they bring their wives.

All the members of the profession in the Island are planning a hearty welcome to brother practitioners, their wives and friends. Members of the profession, natives of Prince Edward Island, who are located in other climes, are specially invited, and it is hoped that a goodly number will make it convenient on this memorable occasion to visit the land of their birth. "the Little Sister of the Canadian Confederation."

every province of this Dominion they rank high in the profession, as well as in national affairs. In this connection it might be mentioned that the Premier of British Columbia, the Hon. Dr. J. D. McLean, and the Minister of Public Works, the Hon. Dr. Wm. Sutherland, are natives of this province. It is hoped that these two distinguished Islanders can make it convenient to be our guests at our Association annual meeting.

Physicians and their friends from Canada generally and from Newfoundland are cordially

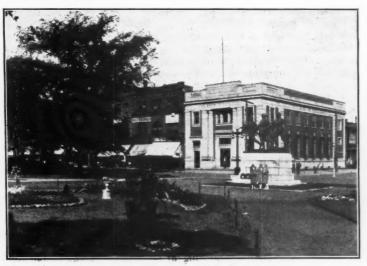


Lions Head, Cavendish, P.E.I.

Realizing that Canada stretches across an area of more than 4,000 miles, we must expect that the annual meeting in any part of the Dominion will be more or less a glorified local meeting with a few from distant parts; and that is a good reason why the Association should move across Canada from year to year.

We believe that the right royal welcome which awaits us in Charlottetown, together with the splendidly arranged programme will prove an allurement which will entice a large number to

break away from practice and enjoy this delightful week. There is another side to it, too. This meeting offers an opportunity for the medical profession in the eastern section of our Dominion to become better acquainted with one another and with those of their confrères in the west who can arrange to make the trip. Acquaintanceship breeds friendship. Friendship begets the spirit of co-operation and mutual support, and these, in turn, cannot help but do good to those and for those who are concerned. Let the profession generally aim now to make this meeting in Charlottetown an outstanding success. Those in charge are



Picturesque Queens Square at Charlottetown

all ito supposetting in

invited to visit this beautiful island, so highly spoken of by Jacques Cartier in 1534, which was named by the Indians "Abegweit", or "Cradled on the Wave." Here there is the second oldest legislature in Canada, and here the statesmen of Prince Edward Island, New Brunswick, Nova Scotia, and Upper and Lower Canada met in 1864 to hold the first meeting which led to the

Confederation of Canada.

Prince Edward Islanders are justly proud of Charlottetown, one of the most beautiful cities of Eastern Canada, situated on the western extremity of the north bank of the Hillsborough It was named after Queen Charlotte, wife of George III. of England. It has treelined tarvia streets, concrete sidewalks, magnificent squares shaded with trees, public gardens, and the beautiful Victoria Park of one hundred acres looking out over the harbour. splendid land-locked harbour, which is formed by the junction of the Hillsborough, West, and North Rivers, is one of the finest in North America, and is capable of accommodating the largest ships. In earlier days when Charlottetown was a garrison city, it was well protected by forts at the entrance to the harbour; Fort Edward, with its battery of guns in Victoria Park, and Fort George, on the banks of the river.

Visitors will have an opportunity of seeing the many places of interest. The entertainment committee is planning a drive to Cavendish, whose surf beaten shores have been made historic by the writings of that talented Island authoress, Lucy Maud Montgomery. The many other attractions of the city, and the surrounding country will be described in future com-

munications.

We are pleased to note the appointment of Dr. G. Harvey Agnew of Toronto to the position of associate secretary of the Association. This appointment relates particularly to the establishment of a new department of Hospital Service. The Association proposes to offer assistance by way of advice and information to all hospitals in Canada desiring it. Dr. Agnew is a graduate in medicine from the University of Toronto. Following army service, he took two years of hospital training and then began the practice of medicine in Toronto. For the past several years he has been a member of the staff of the Toronto Western Hospital.

THE CANADIAN MEDICAL ASSOCIATION

We publish with pleasure the following strong appeal by the Editor in Chief of the Nova Scotia Medical Bulletin for a full representation of the profession at our annual meeting at Charlottetown. The appeal will without doubt focus the thoughts of the profession on the coming

annual meeting, and will we hope not only in the Maritime Provinces but throughout the Dominion stimulate a deep and abiding responsibility in all and thus make for a bigger and better and more representative Federal organization. The

Editorial reads as follows:-

"This number of the Bulletin, as may be seen, is devoted to the interests of the Canadian Medical Association, and more particularly the annual meeting to be held in Charlottetown in June next. The Editors have asked and obtained permission of the Charlottetown Committee to send this issue to all doctors in the three provinces. Our motive is to help focus the thoughts of our profession in these provinces on the coming annual meeting and to help stimulate a deep and abiding responsibility in all that makes for a bigger and better and more representative Federal Organization. We have no illusions regarding the size of the job.

The ferment of organization is slow to work among our medical brethren. In the financial and industrial departments of life the very opposite obtains; and the importance of combining effort and extending organization is almost an axiom for success. We are not essentially of these departments; nor do we desire to be; we are here to fight with what means we know the ills of human beings. We are. therefore, likely to evolve a psychology in a degree peculiar to ourselves; one of detachment and self-sufficiency. And this in our modern day just means that we are either in a very definite rut or heading for it. Osler's remedy for such a condition was the medical society. How often in the wide range of subjects covered by his versatile pen did he warn doctors against the danger of ruts and point to organized medical fraternities as the best means of keeping the mind alert and lightening the burden of practice. Perhaps no one ever stirred the depths of the philosophy of medicine to the same degree as Osler. He saw through the numerous phases of our calling with the vision of the seer, and left us the significant inference that not by science alone should the medical man live. His is an art as well, and its practice culls the experiences of many minds and weaves into its structure knowledge gleaned from many phases of human action. Isolation is not, therefore, a good thing for him. The value of medical organizations is self evident and we might almost apologize for these academic observations. Let us get to the facts.

In this province there are about 400 doctors in active practice. Of these the Medical Society of Nova Scotia has a membership of 261; the Canadian Medical Association has 130. We have not figures for New Brunswick and Prince Edward Island, but we understand their proportion of membership in the Canadian Medical Association is even less than our own. If or-

ganization is what we think it is, then this is not good enough, and the time has come to put things right. If Dominion wide organization is worth having at all, it is quite clear that the gathering up of a number of fragments from the provinces, important as they may be, is not the type of composite entity we are after. Thirty-two per cent from Nova Scotia and considerably less from our sister Maritimes just mean that we are not adequately represented. In the nature of things the Canadian Medical Association will not be the big national organization it is meant to be, representing the best ideals of medicine in Canada until such a time as it can count its membership from coast to coast, from every rank and department of practice, in numbers that run well nigh to 100 per cent of our whole profession. Short of this ideal there is work to do.

If we may take many liberties with the wording of Paul's advice to the Corinthians, it is proper that while we are free to assist others we are under special obligations to those of our own household, in this case, the medical societies of our own country. Active co-operation in what makes for advancement in a great calling should like the virtue of charity begin at home; and the mixing of a little national sentiment in our efforts is quite above the suspicion of selfishness, and, as far as our profession is concerned, is a good enough index of how deeply a love of Canadian achievement has entered our souls.

"What good would membership in the Canadian Medical Association be to me?" asked a practitioner of our acquaintance some time ago, "I cannot get to the annual meetings and my remoteness from the centres makes it pretty difficult to benefit by the clinics under the auspices of the Association. So what is in it for me?

Without debating the validity of these and similar allegations there remains still the best of all good reasons for membership and that, the Canadian Medical Association Journal. think we have not been saying enough about our Journal. It deserves well of our profession. It must need hold a big place in our thoughts because it is virtually the organ of the medical profession in this Dominion. It is a great deal more, however, than an official organ. It has drawn wisely from all the sources that make a medical magazine worth while. It can now answer well to the severest cross examination. In point of originality, in the variety of the subjects and topics discussed and in its literary standards the Journal is the peer of the best on this continent. It is free of the shoddy stuff which, even in comparatively well regulated circles, sometimes finds its way into the columns

of a medical publication. Think you this satisfactory status has been reached without enormous effort? It is the old story—a labour of love; unfaltering ambition, mid much indifference often; vision and perseverance of a few; and, finally, the triumph and the joy of accomplishment. The Journal will continue to grow "from more to more"; but its merit is now such as to leave no cause for our failure to recognize its essential worth in a practical way. And that means becoming subscribers, or in other words, members of the Canadian Medical Association. The Journal is worth the annual fee of ten dollars apart from the membership privilege.

When, therefore, one considers that practically every practitioner takes at least one medical journal it is a bit hard to understand its all too frequent absence from the book shelves of our practising brethren in these provinces. It may be the old psychic phenomenon of not grasping the obvious; for surely the sweet reasonableness of the Journal's silent appeal, to say nothing of our obligations in the matter, leaves no room for controversy.

The Bulletin believes the coming meeting in Charlottetown should be a great recruiting occasion. The time and the occasion serve with double significance for us in the Maritimes. In a manner it is our function. We can easily forsee how well our friends of the Island will carry out every detail of the big gathering. We have seen them in action before and know what they can do. We wish to say, however, with what emphasis we know, that unless the end results of the annual meeting show a doubling or more of the membership from these provinces in the Canadian Medical Association, a higher appreciation of our Journal and a keener sense of the value of Dominion wide organization, then the meeting shall not have been a full measured success.

We listened recently to an address by a doctor who practised some few years under the panel system in the Old Country. He made the most of the good there may be in the plan; but, for all that, the whole outlook was very depressing, and one could easily see that the best type of medical practice cannot be carried out under such a system. De we want this law in Canada? De we want state medicine here? Prophecy need not be invoked to convince us that these problems are not far ahead. Will our profession meet them, speaking as a unit through a national organization? Or shall we pipe up our pros and cons from disjointed fragments, where there is little harmony and an utter lack of the inspiration arising from conscious strength and resource? Let us think it over.'

Correspondence

Our London Letter
(From our own correspondent)

Medical Privilege.—The ethical and legal aspects of "professional secrecy" are discussed from time to time and it is surprising how much interest the question arouses on both sides within the profession. But even those who believe that too much fuss is made about "privilege" are mostly agreed upon the completely ridiculous position recently created in Birmingham. The venereal disease clinics throughout the country, under the Ministry of Health, give a promise of secrecy to all patients, and yet, in a recent case in that city, Mr. Justice McCardie decided that a doctor, working under the regulations framed by the Ministry, must disclose the character of the disease from which his patient was suffering. As a direct result of this decision, Dr. E. Graham Little, Member of Parliament for London University, has introduced a short Bill, read for the first time in November, called the 'Medical Practitioners' Communications Privilege Act, 1927." The introducer has sponsors from the various political parties, and it is sincerely hoped that the Bill will be passed speedily, so as to correct the present anomalous position. It will be necessary that the exercise of the "privilege" granted by the Act shall be taken as a matter of course by judges and juries, so that a doctor is not called upon to say, in effect, "I claim my privilege" in respect of any awkward question, for this would mean disclosure in an indirect manner. Despite this apparent difficulty, however, it is firmly believed that Dr. Little's Bill is urgently required.

The School Child .- Sir George Newman's Annual Report on the Health of the School Child is always awaited with great interest by those concerned about the physique of the nation. Are we maintaining our standards? Are we becoming a C3 nation? Or is there definite evidence of an all-round improvement? answer to these questions is largely to be found in the state of health of the children of this country. The report for the year 1926, just issued, is on the whole encouraging. The physical condition of the child at entry is better than it was in 1913. "From the data available it seems that the child of to-day is stronger, taller, and heavier than the child of 1907. He is a better nourished child. . .The direct treatment of ailments and defects removes causes of weakness. There is less dental decay, less mouth breathing, fewer inflamed tonsils and glands, less tuberculosis and anæmia; and there is a decline in the amount and severity of rickets." The basis of the work is medical inspection. Children are examined at the ages of 5, 8 and 12 years

and more often when defects are noticed. Remedial work then follows: the child may be referred to practitioners, voluntary hospitals, or to treatment centres. These last are becoming increasingly popular in London. Especially during the past year there has been an expansion in the provision of schemes for the treatment of crippling defects. There are now 132 schemes in England and Wales and there is definite evidence of progress in the prevention of such defects. One of the difficulties to be faced in the future is the health of the pre-school child. One-quarter to one-third of the children need medical attention immediately on admission to school. In London, among 10,168 children referred for treatment 5,724 were entrant infants. There is no continuous supervision by the same authority, for the child up to the age of five is under the maternity and child welfare workers, coming later under the educational authorities. In some centres, such as Liverpool, the same authority is in charge from the beginning, and an extension of some such scheme is obviously needed. Despite this, however, the tone of the report is optimistic and a credit to the staff of the local educational authorities.

London's Water.—The average medical practitioner has no doubt learnt at one time or another that each individual in London uses 37 gallons of water a day, but even this small fact, being one of the few required for the "hygiene" section of the final examinations, is apt to slip the memory. Consequently, Sir Alexander Houston's lecture to the Royal Society of Medicine last month contained an amazing number of facts which were startling to his audience. For example, London's water is stored in 47 reservoirs, covering 2,704 acres, and containing 19,657 millions of gallons. Of this vast quantity 60 per cent comes from the Thames and the remainder from the New River, the Lea, and deep wells in the Kentish chalk. It is just over 300 years ago that Sir Hugh Myddleton first provided pure water for London, and nowadays the seven million inhabitants of that city enjoy a supply which is admittedly unsurpassed for chemical and bacterial purity. Sir Alexander Houston gave some very interesting details of how this purity is obtained. Storage is found to be the most effective measure, and in one reservoir fifteen days' storage reduces the colon bacillus content to one-hundredth. During the war chlorination was introduced as a temporary measure, and was found to be very efficient. The actual "dose" used for Thames water is one-half part to a million! Certainly the virtual absence of typhoid fever from the county of London during this century must be attributed, at least in part, to the achievements of the water-works' engineers, whose unobtrusive work justifies the title of "romance" which the lecturer used for his address.

ALAN MONCRIEFF

London, January, 1928.

MEDICAL MEN AND NARCOTICS

To the Editor:

With reference to the article on page 92 of your January issue, entitled "Medical Men and Narcoties", may I point out that in paragraph seven of the extracts from the narcotic law, Codeine or any salts or compounds thereof are wrongly included, as same were excluded from the Act some years ago.

Ottawa, Jan. 15, 1928.

J. A. AMYOT, Deputy Minister

In reference to the case referred to above Dr. Amyot writes as follows:

You may take as an absolute fact that never, under any circumstances, does our Narcotic Branch act in cases of this kind, with a view to obtaining evidence, which can be produced in Court, unless strong suspicion exists in the first place, which suspicion has been, so far as is possible, confirmed by careful and discreet inquiries. Further, while the very nature of the offence of furnishing narcotics for the gratification of the appetite, as distinct from the amelioration of a medical condition, may cause the use of an addict to be essential, in obtaining evidence, as of course it is ridiculous to assume that infringements of the law can be detected by sending a Mounted Policeman in full uniform to the doctor's office; we do, as a matter of fact, prefer to employ people who are not addicts when suitable personnel is obtainable, and, as a matter of fact, in the case now under discussion, the agent employed, who commenced his services with this department in May last, was emphatically not an addict at that time, although he had previously been one, and he was under the constant supervision of reliable members of the Mounted Police for a number of months, under conditions which practically precluded his reverting to his former condition. It was not until he had completed certain cases, and almost reached the conclusion of others, that he fell from grace, whereupon we immediately placed him in hospital, to undergo a cure, and he has remained free from addiction ever since.

I therefore think that perhaps the statement that "An addict who, failing to find a better

way of making a living, had offered his services to the Detective Department, was employed to catch the doctor," is scarcely a fair statement of the circumstances.

THE GENERAL PRACTITIONER

To the Editor:

I have read in the January, 1928, number of the Journal the letter from Dr. John Stewart of Halifax in which he disagrees with statements appearing in my contribution upon "Specialization" (in the October number.) I deeply regret having made statements that appear to conflict with the opinions of one who holds a unique position in the minds and hearts of all Canadian medical men. The disagreement, however, is more apparent than real. When I say, "even now there are no general practitioners" I mean that there are no practitioners who attempt to cover the whole field. practitioners must share their responsibility with others if the patient is to benefit from our recent advances. For this reason the work of all must of necessity gradually become less "general" and more "special." One hundred years ago this did not apply because it was quite possible for a single energetic individual to serve all types of patients as effectively as was possible at that time. For the general practitioner of the past and the physician who is doing all he can do of general practice at present we all have the deepest admiration.

Perhaps the case of the specialist was too vehemently presented in the paper under discussion. This attitude was produced by hearing the matter frequently discussed and by observing the usual trend of the argument. It usually ends with the general practitioner being placed upon a pedestal and being credited with every possible virtue while the man who has dared to admit that he cannot do all things well is put in the category of a mere tradesman who feels none of the aspirations and practises none of the self sacrifice upon which the profession prides itself. Usually the specialists—and to-day this group includes some of our most respected membersstand by complacently and accept the implication. Surely it is not right. Surely there is scope in the practice of the narrowest specialty for all the kindness and all the sympathy that has made the general practitioner the object of

universal admiration.

As Dr. Stewart says, the subject of specializar tion is very large and very complex and deserves careful discussion.

J. D. Adamson

Winnipeg, January 24, 1928.

Reports of Societies

CALGARY MEDICAL SOCIETY
Some Recent Advances in Biochemistry*

Professor Collip began his address by discussing the treatment of pernicious anæmia by liver extract. He first referred to the work of Whipple and his experiments on dogs. Whipple induced a condition of severe anæmia in dogs by hæmorrhage and observed the return of the blood-picture to normal in animals fed upon different diets. He demonstrated conclusively that liver-feeding is of definite value in speeding up the process of new red-cell production. Minot and Murphy of Boston investigated the effect of a diet rich in liver in the treatment of pernicious anæmia. They obtained excellent results in a large series of cases followed over a period of one to three years. As it is somewhat difficult to get patients to take adequate amounts of liver for a long period of time, Cohn, working in collaboration with Minot and Murphy, prepared a number of liver-extracts which were tested clinically by his associates. The result of the work, which Cohn reported before the meeting of the Federated Biological Societies in Rochester in April, 1927, was the production in the form of a powder of a liver-extract, which, when administered to patients suffering from pernicious anæmia, had the same beneficial effects as wholeliver feeding. Cohn's original method of preparing the active liver-powder was a long and elaborate process and was described in detail by Dr. Collip. He then described a simple method which he had been using to produce a liver-extract, which, judging by its effects in the few cases in which it had been tried, would appear to be similar to Cohn's extract. The extract would appear to be of little or no value in secondary anæmia. The speaker referred to the work of Koessler of Chicago who had been working on the theory that pernicious anæmia was due to a vitamin deficiency. This investigator had obtained good results in the treatment of this disease by the use of a diet rich in vitamins. Liver was used on the basis of its rich vitamin stores. Conner of the Mayo clinic has also reported favourable results with the high vitamindiet treatment.

On the liver-diet Minot and Murphy had shown that the reticulocytes count runs a characteristic curve. It rises at first more or less paralleling the red-cell count, but soon reaches a maximum at about 15 per cent as a rule, and then falls again to 5 per cent or less. They have obtained similar results with the active liverextract.

Watkins and Berglund have recently called attention to the fact that after a period of liver-feeding the eosinophiles increase to a high degree. This response, they have suggested, may be an expression of an overdose of liver.

Minot and Murphy have found that there is very little effect produced on the achlorhydria by liver-feeding.

The speaker mentioned the recent triumph of Harrington and Barger in establishing the correct formula for Kendal's thyroxin, and later successfully synthesizing the active principle. Dr. Collip considered this to be one of the finest pieces of research carried out in recent years.

The preparation by Abel of crystalline insulin and its significance was briefly touched upon.

Professor Collip then discussed at some length recent work in the vitamin field. He mentioned the early work of Mellanby on puppies, which showed that rickets could be produced by lack of fat-soluble vitamin. The curative effects in rickets of sun-light, ultra-violet rays, and codliver oil have now been correlated, since it has been shown that vitamin "D", or the antirachitic vitamin, is contained in the non-saponifiable fraction of cod-liver oil; that this fraction is rich in cholesterol; and that cholesterol can be activated by ultra-violet rays, to become a potent antirachitic substance. More recent work would tend to show that only a very small fraction of cholesterol is concerned in this reaction, and that this latter fraction is in all probability an impurity of the nature of ergosterol. Radiated ergosterol is itself a most powerful antirachitic agent.

Professor Collip referred to the recent work of Haden and Orr and others on high intestinal obstruction. If a ligature is placed high up in the small intestine of an animal the animal will die in from one to four days. The blood-chemistry of such animals will show a marked fall in chlorides and a rise in alkali reserve, with high non-protein nitrogen and a marked increase in urea, comparable to acute damage of the kidney. In the treatment of this type of bowel-obstruction large amounts of saline solution should be given intravenously, as well as glucose solution. The speaker brought the lecture to a close by a brief discussion of insulin substitutes; myrtillin, synthalin, and glukhorment a subject which has recently been discussed in the Journal columns.

^{*}An Address delivered by Professor J. B. Collip, before the Calgary Medical Society, December 6, 1927. Abstracted by G. E. Learmonth.

THE OSLER SOCIETY OF WINNIPEG

On November 29th, at the Medical College, the Osler Society presented an Osler programme dealing with the work and personality of our greatest Canadian physician. Mr. H. Medovy reviewed Osler's early life; Dr. F. C. McDougal, his work at McGill and Philadelphia; Mr. F. C. Bennett, his Johns Hopkins career; Mr. Lennox Bell spoke of Osler as a literary man, and Mr. A. W. S. Hay dealt with Osler's personality as reflected in his contact with patients and students. A number of the attending staff of the Winnipeg General Hospital were present and from this group Dr. R. W. Kenny gave personal reminiscences of Osler as a consultant when visiting the Canadian War Hospital at Taplow; Dr. J. D. Adamson referred to him as a private consultant in an interesting case of anæmia; and Dr. Ross Mitchell read a short article of Osler on a visit to William Hunter's library in Glasgow University. Dr. M. B. Perrin, President of the Society, spoke briefly at the close, summing up the many-facetted life of the beloved physician.

REPORT OF THE LAST SESSION OF THE HEALTH COMMITTEE OF THE LEAGUE OF NATIONS

The Health Committee held its eleventh session the last week of October, in Geneva. activities of the health organization during the past year were reviewed, and two important problems discussed were the development of the associated activities of the League in Latin America and the work of the Malaria Commission. In reference to the activities developed in South America a report was presented by the president and medical director of their mission through certain of these Latin-American countries during the past summer. A meeting took place in Montevideo under the direction of the Health Committee to discuss questions connected with the infant mortality of the South American countries, which, important as it is in European countries, becomes an even greater and more urgent problem for South America, where infant mortality rates are comparatively high. The meeting was attended by pædiatrists from

Uruguay, the Argentine, and Brazil, and a careful preliminary investigation regarding the causes of the high mortality was undertaken.

Proposals were also discussed and approved in principle for co-operation between the health committee and the Brazilian health authorities, with the aim of developing an international centre for the scientific study of leprosy, a disease still very prevalent in Latin America.

The University of Brazil also proposes the development of a School of Public Health under the auspices of the League, which it is proposed, should have an international character and would help to ensure a supply of sanitary officers for Brazil and for neighbouring Latin-American republics which at present are lacking a fully developed sanitary organization and adequately trained staffs.

The proposal by the Argentine Republic to found an international school for infant and child hygiene at Buenos Aires was welcomed by the Health Committee. The newly constructed maternity institute at Buenos Aires, perhaps the finest institute for social medicine in South America, would be the nucleus of the new school, and would provide training facilities for the nursing personnel to be distributed to provincial stations in districts with high infant mortality. The Health Committee also expressed satisfaction at the readiness of the Uruguayan Government to collaborate closely with the joint commission of experts for the study of public health. The president of the National Health Council of Uruguay stated that he was prepared to come to Europe in order to keep in touch with the work of that commission, and make necessary arrangements to enable the proposed schools and study centres in both the Argentine Republic and Brazil to be placed under the auspices of the League of Nations.

The report of the Malaria Commission emphasized the Commission's view that no one method of malaria suppression can be considered the best. Each district must be carefully studied before deciding on the method most likely to yield good results. The committee also expressed its agreement with the measures proposed by the Malaria Commission to organize an effective campaign against malaria in the Bourgas region in the Balkans.

In many countries rheumatism and rheumatoid diseases are so prevalent as to constitute one of the greatest scourges of human kind. In Germany spa clinics have been established on lines similar to those of local dispensaries for tuberculosis as administered in England. An important feature of these is that workers affected by rheumatism in its early stages can receive appropriate treatment without remain ing away from home or work. Similar institu-

tions have been started in France, Italy, Sweden, and Holland. Now, the British Committee of the International Society of Medical Hydrology has proposed a scheme looking to the establishment of such an experimental clinic in London. The suggestion has also been made that insurance companies might find it to their advantage to help in the financing of such institutions.

Pharmacology and Therapeutics

ON THE EMPLOYMENT OF OVARIAN EXTRACTS IN PRACTICE

In the discussion which followed the reading of the paper by Professor Dixon, on the "Use of Ovarian Extracts," Dr. Katharine Coward of London stated that the standardization of ovarian extracts was based on their power to induce estrus in ovariectomized animals. It was found that the dose of any extract required to produce this condition in a rat varied so much that a large number of animals had to be used for the assay. A curve of response had been drawn up on the results obtained from the subcutaneous injections of different doses of a particular sample of ovarian extract to each of the ninety ovariectomized rats. It was significant that while some rats responded to a dose of 2.5 mg. of this extract some did not respond to a dose of even 17.5 mg. The unit of æstrin was defined as that amount which would produce æstrus in 50 per cent of the animals tested; twenty animals being used for each test. A similar test was performed at the same time on seventy ovariectomized mice. It was surprising to find that the rat unit was equal to the mouse unit and was quite independent of the weight of the two species of animals.

Dr. W. R. Addis (Manchester) described the use of ovarian extract without the corpus luteum in the induction of labour, and in dysmenorrhea due to inadequate uterine contractions. In the first case five intramuscular injections, each of 1 c.cm. of ovarian extracts, were given at threehourly intervals. If these failed the injections were repeated after an interval of twenty-four hours, the uterine contractions being kept under careful observation. In 50 cases so treated there were 4 failures; 31 patients were primiparæ. The average duration of labour was: first stage, twenty-three hours; second stage, two and a half hours; and third stage, fifteen minutes. All the children were born alive and well. The patient hardly felt the uterine contractions during the first stage—a point of considerable interest, and comparable with intestinal and rectal muscular contractions, as well as with the freedom from pain during labour which occurred in some less civilized peoples. It appeared, therefore, that the ovary produced a hormone which acted specifically on the uterus, originating a bipolar action directly through the autonomic system.

Dr. W. F. T. Haultain (Edinburgh) said that it had been his practice for at least five years in cases where both ovaries had been removed, either with or without the uterus, to give such patients a course of ovarian extract, beginning on the fifth day following operation by giving 5 grains three times a day and continuing it for two months. For the next two months 5 grains were taken twice a day, and for the fifth and six months following operation 5 grains were given once a day—the idea being to minimize the menopausal symptoms by decreasing doses of ovarian extract. If the symptoms became more severe the dose was increased. Out of 31 patients so treated, 24 took ovarian extract for one month or more, and there were 7 who did not, the latter including principally hysterectomy and salpingo-oöphorectomy cases. The general health was improved in 19, 12 patients became stouter, and of these 6 were cases of salpingo-oöphorectomy and under 40 years of age; 9 had periods of depression. In 14 cases flushings were severe, in 7 slight, while three had practically no flushings at all. After a period of twelve months flushings were only present in 8; of these 6 were cases of salpingo-oophorectomy under the age of 40, in whom the uterus had been left. This result compared very favourably with the patients who had not taken ovarian extract, for in 6 of the 7 who had not received it flushings were still present at the end of twelve months, headaches occurred in 8. while nervous symptoms were manifested in 5. Flushings were very much improved by the treatment. The ovarian extract seemed to have helped the patients with regard to adiposity, headache, and nervous symptoms, but most of all in regard to flushings. Dr. Haultain thought that when both ovaries had to be removed then the uterus should be taken out also, especially in cases of chronic or purulent salpingitis. The ovarian extract had been administered orally, and Dr. Haultain concluded that if it were given hypodermically once or twice a week following operation the results would be even better.

EXPECTORANTS—CALCIUM SALTS

At the meeting of the British Medical Association in Edinburgh several interesting papers were read which were followed by valuable discussions*.

Professor J. A. Gunn contributed a paper on

the value of expectorants.

The lecturer stated that during the course of the last decade there had been notable advances in nearly every department of therapeutics, but in this one subject little progress had been made during the last century. Hardly any experimental work had been done on this class of drugs. He had examined textbooks from all countries and found they contained mostly repetitions of what Christison had written ninety years ago.

^{*} Abstracted from report in Lancet, Aug. 20, 1927.

One of the difficulties regarding expectorants lay in estimating any alterations in the amount or character of the secretions from the bronchi and the impossibility of separating them from salivary secretion. In a normal person it was not easy to observe any increase in secretion. In a person with dry bronchial mucous membrane a slight secretion became immediately noticeable. There was a motor and a secretory mechanism. The former was rather complicated. Cough only cleared the trachea and upper bronchi. More important was the movement of the cilia. As a student he thought this a myth, but now regarded ciliary movement with profound respect. He found that a small piece of ciliated epithelium could propel solid particles at the rate of at least an inch a minute. Therefore it took less than half an hour to move anything from the depth of the bronchi to the upper passages. A small portion of the bronchi near the alveoli had no

The classification of expectorants was most unsatisfactory. Hitherto they had been classified either according to the place where they were supposed to act or according to whether they were sedative and stimulative. For the latter classification there was no justification. Prof. Gunn divided them according to whether their modification was: (1) Reflex, through gastric irritation—tartar emetic, ipecacuanha, senega, squill, potassium iodide, alkalies. (2) Central -apomorphine (emetine). (3) Stimulation of secretory vagal endings-pilocarpine. (4) Stimulation of glands during excretion-potassium iodide, ammonium chloride. He then discussed the action of the various drugs in detail. Ipecacuanha acted better in children than in adults, and was valuable in acute diseases possibly because it had a tendency to lower temperature. Probably it got its reputation on account of this. If the doses were pushed till nausea supervened the expectorant effect was much more powerful. This raised the question whether the stimulus went only to the secretory fibres or to the broncho-motor fibres of the vagus as well. Senega acted in the same way as ipecacuanha; there was no reason for regarding it as a stimulant expectorant and ipecacuanha as a sedative. Squill might come into a different category, but it was first used as an emetic, then as an expectorant, and only later was its cardiac action realized. Its effect was explained by reflex action from the stomach. It also had a central emetic action. Probably it had a more prolonged effect than ipecacuanha, but this had not been accurately measured. Potassium iodide was a very valuable expectorant, especially in the chronic bronchitis of adults. It acted both reflexly from the stomach and directly on the glands of the mucous membrane. Regarding ammonium chloride there was great divergence of opinion. Some text-books said it increased secretion, some that secretion was diminished, and others that secretion was increased in large doses and di-

minished in small doses. Clinically it acted as an expectorant.

Prof. Ralph Stockman (Glasgow) spoke of the observations of Christison. Many drugs could only be studied in disease, and expectorants belonged to this category. It was difficult to study them satisfactorily in animals. The method of taking up expectoration with blotting paper was too crude to be of value. Many patients with bronchitis had a degenerated mucous membrane and in them drugs would have quite a different action.

THERAPEUTIC USE OF CALCIUM

On the second day of the meeting a discussion on the Therapeutic Uses of Calcium Salts took place and was opened by Prof. S. R. Fraser who introduced the subject by stating that an understanding of the indications for the administration of calcium in disease was made more difficult by the fact that calcium was always present in the body. The serum in health contained about 10 mg. per 100 cm., and the amount, with few exceptions, was kept remarkably constant. Owing to some glandular influence which maintained a balance between absorption, elimination and deposition only a small amount of the calcium ingested was made use of in the system. Elimination of absorbed calcium was by excretion into the digestive tract and to a slight extent in the urine. Certain facts concerning the functions of calcium were well established; others were still vague. Calcium was essential for the clotting of the blood, and for the proper contraction of the heart muscle, and was an essential constituent of bone. A low calcium content of the serum was associated with neuro-muscular disturbance and tetany. A balance between calcium and magnesium ions and between sodium and potassium ions had been demonstrated in normal life, and the part played by calcium in spasmophilia and tetany must be viewed as exercised through this balance of ions as well as by calcium specifically.

The amount of total calcium in the serum was used as an indication of the calcium supply in the living body. It apparently occurs in different states of chemical combination: a non-diffusible fraction combined with protein; a diffusible and easily iodized fraction about 50 per cent of the total, and an ionized fraction estimated as from 20 to 25 per cent of the total. In considering significance of departures from the normal values for the calcium content of the serum it was important to remember that they might affect any of these fractions. Until simple and accurate methods were devised for estimating the available calcium in the blood the therapeutic use of calcium could not be placed on a satisfactory basis

The total calcium of the serum was definitely reduced in severe nephritis. In forms with pronounced cedema there was reduction also in the serum proteins. Blum and his co-workers advocated the administration of calcium chloride for the purpose of diminishing the cedema, and

it has proved to be an efficient diuretic in many cases. It would appear that its action was not due to any specific action of calcium, but by the change that resulted in the balance of ions in the body fluids. In severe cases of uræmic nephritis the serum calcium was definitely reduced, and this reduction was accompanied by an increase in the inorganic phosphorus in the serum, but in this form no beneficial results followed the administration of calcium. Postoperative tetany was specifically due to the low calcium content of the body fluids and could be relieved by raising the calcium content. The administration of extracts of the parathyroid glands was able to do this. The oral administration of calcium salts in excess could also raise the level of calcium in the serum and would assist. With regard to other conditions Professor Fraser said that low values for serum calcium had been reported in various skin diseases but there was no evidence that deficiency of calcium was of signifi-

cance in the pathology of the disease.

In the discussion which followed Dr. Parsons, of Birmingham, said that he would confine his remarks to the effect of calcium in children. He never prescribed calcium salts except in tetany. If ionic calcium in the blood was diminished tetany would occur, but spasmophilic manifestations might appear under certain circumstances with an undiminished blood calcium. Pyloric stenosis in infants furnished examples of this; in some cases convulsions occurred and recurred and proved fatal. In some instances, shortly after the Ramstedt operation, the child showed a period of apnœa followed by deeper breathing and convulsions. The condition was one of alkalosis, and resulted from loss of chloride ions due to repeated vomiting and high intestinal obstruction. In this alkalosis, although the calcium in the serum was normal or higher than normal, the ionic calcium was diminished. On the other hand, in severe azotæmic nephritis, in which the serum calcium might be low, tetany did not occur, because there was an acidosis which resulted in more of the calcium being ionized. The therapeutic problem was chiefly how to maintain the ionic calcium at such a level that the specific effects of low calcium would not occur. Dr. Parsons then referred to the question of calcium concentration in nephritis and cœliac disease. What were the factors concerned in the absorption of calcium from the alimentary tract, and how could absorption be increased? It had been shown that whilst excessive amounts of calcium in the diet tended to increase its total absorption and retention, they impaired phosphorus retention and vice versa. The retention of one element in the intestine by an excessive amount of the other was explained by the formation of insoluble calcium phosphate. To obtain the maximum absorption of both they must be properly balanced in the diet; the calcium should exceed the phosphorus. In children one pint of milk daily would meet this requirement. Another important factor was the presence of fat in the diet. Low calcium retention was found both when there was insufficient fat intake and when large quantities of fat remained unabsorbed in the intestine, as in cœliac disease. The influence of fat on calcium was due to the vitamin

D in it.

Mr. C. P. Stewart (Edinburgh) said that Dr. Parsons' clinical observations were borne out by biochemical research. Acidity was a very important factor in the absorption of calcium, at any rate in normal persons. Calcium could only be absorbed after being broken down into Ca ions. If it was given with a protein meal it was ionised by the hydrochloric acid of the stomach and absorbed; if it was given on an empty stomach there was not enough acid and the absorption was poor. If the reaction of the intestine was alkaline, insoluble soaps and calcium carbonate were formed. A distinction had to be made between absorption and retention. Absorption was often normal but the calcium was immediately re-excreted into the large intestine. Retention was associated with vitamin D. Parathyroid hormone was capable of raising serum calcium but it did not increase its absorption. He had obtained the same rise of serum calcium after parathyroid when the whole ali-mentary canal had been removed from the animal. In further experiments he had isolated and washed out the large intestine and estimated the excretion of calcium after three hours. He then gave parathyroid extract and the same amount of calcium was excreted. It was clear, therefore, that the increased calcium in the serum could only have come from the tissues and ultimately from the bones. Parathyroid was of no therapeutic value in raising absorption but led to depletion of bone calcium. Calcium in the blood was in a partly ionised, partly non-ionised, and partly diffusible form. Our knowledge concerning these forms was vague and it was by no means certain what part ionic calcium played in blood coagulation.

Prof. L. Blum (Strasbourg) had studied the diuretic action of calcium salts. He showed charts of different cases, the first being one of idiopathic cedema. A salt-free diet with any of the ordinary diuretics had no effect on the condition. If sodium chloride was given the cedema increased. Calcium chloride and calcium lactate produced diuresis and loss of weight, provided that a salt-free diet was maintained. In the presence of sodium chloride, calcium salts had no effect. Calcium chloride was also effective in cases of chronic nephritis with cedema, in the ascites of hepatic cirrhosis, and in inflammatory exudates such as pleural effusion. In the latter there was a fall in temperature during calcium

administration.

Clippings on Current Topics

AN EARLY CANADIAN APOSTLE OF ANTISEPSIS

The following abstract from a paper entitled "A case of Ovariotomy" by Dr. A. Groves, of Fergus, Ontario, which appeared in the Canada Lancet of July, 1874, has been forwarded to us by Dr. F. N. G. Starr, of Toronto for publication. It records a very early appreciation of the value of antiseptic measures in surgical operations, and will, we are sure, be read with interest by all Canadians. Dr. Groves, we may add, is still in active practice.

.There was one point of detail in the case which I think of considerable importance in any serious operation but which is not mentioned by the authors so far as I know. It is this-that I had all the water used during the operation boiled and allowed to cool, and then slightly disinfected. By taking these precautions, all risk of introducing the seeds of after trouble by means of the water necessarily used is avoided. This risk might by some be looked upon as quite chimerical, but surely when the germs of typhoid fever and other diseases are introduced very often with the water we drink, and those germs are so tenacious of life as to pass through the stomach uninjured, there may be some danger in introducing water which may be impure into the peritoneal cavity.

"This is a point which appears to me to be worthy of at least as much consideration as the disinfection of sponges, ligatures, etc., and one which does not seem to have, hitherto, received the attention its importance merits."

OBSERVATIONS ON A RECENT ENGLISH LIFE-TABLE

The decennial supplement of the Registrar-General contains a new national life-table for England and Wales. This table is the work of the government actuary, Sir Alfred Watson, and is based on the figures of the population returned in the 1921 census, and on the average number of deaths recorded in the three years 1920, 1921 and 1922. The new table confirms the opinion which is generally held, that "the vitality of the nation has been steadily improving." A rough measure of the improvement is afforded by a comparison of the "expectation of life" as indicated in the life-tables of 1906, 1911 and 1921 (The new table), respectively. In 1906 a male child at birth had an expectation of life of 48.53 years. In 1911 the expectation of life at birth had risen to 51.50 years. The new table gives an expectation of life of 55.62 years. The figures relating to female children at birth are, respectively, 52.38, 55.35 and 59.58. pointed out in the report that improvement in the rate of mortality is specially marked at the youngest ages. The probability of a child's dying in the first year of life, for example, has decreased by about 40 per cent during the fifteen years between 1906 and 1921. Curiously enough, an appreciable deterioration has occurred in the rate of mortality of women between the ages of eighteen and twenty-seven. This deterioration, however, does not affect married women. It may be that, in recent years, young women have been engaging in tasks which impose too great a strain upon their physical constitutions; in any case, it seems possible that women's place in the industrial and commercial worlds can not be determined solely by women's enthusiasm to enter and share these worlds. A further commentary on women's strength as a worker and wageearner may possibly be afforded by the fact that rates of mortality are invariably heavier among widows than among single women or wives. The report deals at considerable length with mortality in different geographical areas of the country, and confirms the prevailing view that the rate of mortality varies both with the geographical distribution of the people and with the density of the population. But of these two the geographical is the preponderating influence. In all the areas examined the difference between the death-rate of county boroughs and that of rural districts is greater among males than among females, but the point is emphasized that this difference does not appear to be due to the greater strain of working conditions to which men are subjected, but to the relatively favourable mortality experience of the male population of rural areas. The healthy conditions of country life, in other words, are enjoyed to a greater extent by men than by women, whereas in towns the two sexes are subjected, as a general rule, to the same kinds of conditions .-The London Times.

CONTROL OF TUBERCULOSIS

For the last six years Canada has been waging one of the most sustained and costly campaigns ever undertaken in the history of veterinary science. It has long been known that tubercle bacilli differ according to whether the infection is human, bovine, or avian. It has also been known that these bacilli are closely related and can, at least to some extent, infect hosts other than those from which they originate. Between 20 and 30 per cent of the child mortality from tuberculosis is, for instance, due to infection with the bovine type of bacilli through milk.

The Canadian campaign in this field has as its immediate object the stamping out of tuber-culosis in cattle by slaughter, and most encouraging results have already been achieved. There are now 3,000 herds fully accredited as free from tuberculosis, and an equal number is well under way towards certification. In the whole of Prince Edward Island and in large areas of Quebec, New Brunswick, Ontario, Manitoba, and Saskatchewan infection has been reduced to less than 1 per cent, and a further area in Nova Scotia is quickly being brought up to the same standard. Compensation paid for the year ended last March amounted to just under

\$500,000 (£100,000).

Side by side with these efforts, research is being carried out to establish the exact interrelationship of the various types of tubercle bacilli and the susceptibility of the different species of domestic animals. In this field some suggestive conclusions have already been reached. It has been shown, for instance, that swine may be infected by poultry, that sheep (which used to be thought immune) and silver foxes may be infected by cattle and even by humans, that horses and cattle may suffer avian infection, and that dogs and cats are similarly liable. Human infection with the avian type has occasionally been recorded. Thus the problem has been found more complicated than was formerly believed. For instance, the theory that if we could eradicate tuberculosis in cattle it would automatically disappear from swine has been exploded. What the ultimate results will be it is impossible at this stage to say.—Dr. J. H. Grisdale in the Weekly Times, Dec. 1, 1927.

THE STORY OF TOBACCO

Tobacco is an Indian word, but nicotine is named after the French Ambassador in Lisbon, Jean Nicot: he grew tobacco seed in his garden, and vaunted the leaves as a cure for all external diseases. Snuff obtained from Nicot was introduced by Catherine de Medici at the French Court about 1560 as a specific for headaches.

Tobacco was brought into England by Ralph Lane in 1586; he taught its use to Raleigh, who became a devotee, did much to popularize it, and carried his habit even to the scaffold. By the seventeenth century the use of tobacco had spread to almost every European country.

A reaction against its use arose in the fifteenth and sixteenth centuries. James I published in 1603 a pamphlet entitled "Misocapnus seu de abusu Tabaci Lusus reginus," in which he says:

"O cives, si quis pudor, rem insanam abjicite, ortem ex ignominia, receptam errore, frequentatem stultitia: unde et ira numinis accenditur, dignitas gentis senescit domi, vilescit foris; rem usu turpem, olfactu insuavem, cerebro noxiam, pulmonibus damnosam, et si decere liceat atri

fumi nebulis tartareos vapores proxime repraesentantem."

The Tsar Michael punished his soldiers with the rack and knout for smoking; Urban VIII forbade the use of tobacco in any form in church during divine service. How serious must have been the abuse of tobacco in Spain in 1642 may be gauged from the apostolic brief which tells us that priests chewed tobacco during service and their vestments became stained with expectoration. Benedict XIII, himself a snuff-taker, rescinded the prohibition in 1724, but ordered that the use of tobacco in the Church of St. Peter at Rome should cause no disturbance; smoking was consequently excluded, though $\hat{\mathbf{I}}$ believe that the use of snuff is allowed in Catholic churches to-day. Nevertheless, neither the King's book, the Czar's knout, not the Pope's proclamation seriously affected the use of tobacco.

To the Puritans in England of the seventeenth century smoking was the mark of the drunken Cavalier. Nevertheless, the Roundheads later indulged, since Evelyn states that the soldiers took tobacco at Cromwell's funeral. The association of smoking with the roisterer and drunkard prevented its acceptance in society till the end of the eighteenth century. During the Regency the meerschaum and cigar appeared in the streets, but in no clubs except the military. Cigarettes reached us from Spain. A Greek, John Theodori, who settled in Leicester Square in 1861, was the first to make them in England. Not until the later Victorian days was the respectability of smoking established.

The use of tobacco has now become universal throughout the world. In England no serious attempt has been made to determine its effect on the public health. America has been more active. Miss Lucy Gaston, under the auspices of the Anti-cigarette League, has been instrumental in organizing several national congresses. The twentieth amendment to the Constitution of the United States of America, which has never yet been ratified, provides that: (1) The manufacture, sale, transportation, inhalation or otherwise consumption of cigars, cigarettes, pipe tobacco, cut plug, and snuff is hereby prohibited. The Congress and the several States shall have concurrent power to enforce this article by appropriate legislation, and to appoint enforcement officers in every community.

-Brit. M. J. Oct. 22. 1927

DANGERS OF NEW QUACKERY

DOCTORS AS VICTIMS

A warning against the new style of medical quackery was given by Dr. E. W. Ainley Walker, Dean of the School of Medicine in the University of Oxford, in the inaugural address which he gave yesterday at the opening session of Westminster Hospital Medical School. Speaking upon "The Profession of Medicine," he said that the application of pure science, and even of

the biological sciences, to medicine had not until comparatively recently always received all the recognition it deserved. It was on the scientific side of medical training that the greatest blots remained. The neglect into which pharmacology had fallen was even greater than perhaps was ever that of pathology, and unfortunately it was almost unheeded, although the subject of experimental pharmacology was one which to-

day offered unlimited possibilities.

The enormous strides which had been made in our knowledge of organic and synthetic chemistry, and in our acquaintance with hormones, with internal secretions, with vitamins, and with other products of the activities of living matter, had opened a wide field for experimental and therapeutical investigation-a field which, because it had been neglected by the faculty, had rapidly become commercialized in certain countries, with results that were, he thought, highly detrimental to real progress in therapeutics and the treatment of disease. "It is hardly too much," he declared, "to say that a new kind of quackery has sprung up which is all the more dangerous because it is the doctor rather than the public who is the intended victim upon whom vaunted but ill-tried remedies are daily being pressed in those piles of futile puffs and specious advertisements that fill his morning post and crowd his breakfast table. On this account, if on no other, it is high time that due attention be given to the teaching of pharmacology." Dr. Walker emphasized the pressing necessity for the fuller development of postgraduate study and the organization of clinical research. Work of that kind would be invaluable to the profession, and through it, to the public at large.—London Daily Telegraph, Oct. 4, 1927.

THE ARNETH COUNT

Recently interest has re-awakened in regard to a method of blood examination which was evolved by Arneth over twenty years ago. This method, which has undergone certain modifications, is one which gives an index of the rate of the production of polymorphonuclear leucocytes, and their entry into the blood stream. Briefly, it consists of counting the lobes of the nuclei of one hundred polymorphs, and dividing the cells of the sample into classes depending on the number of lobes. The technique is simple, and little practice is necessary to obtain steady counts from several blood films made from the same specimen of blood.

To get the best results Heidenhain's iron hæmatoxylin should be used, but if the count is required quickly methyl pyronin green may be used. The latter stain is made up of 1 grm. of methyl pyronin green, 95 per cent alcohol 15 c.c.,

and 3 per cent carbolic water to 100 c.c.; it is applied to the film for about twenty minutes, washed off, and dried. With the hæmatoxylin, fixation for five minutes in Sousa is advisable; the films should then be mordanted in iron alum for at least twelve hours, and stained for at least the time of mordanting, then differentiated in iron alum until only the nuclei of the polymorphs hold the stain. The criterion for classifying the cells is that lobes are only regarded as separate when they are connected by not more than the finest strand of nucleoplasm. matter how convoluted a lobe may appear, it must be counted as single unless the connecting bridges are the thinnest possible. Reference to a slide will make the distinction clear, and a little practice makes it easy to decide, in the majority of cases, to which class a cell belongs. In very doubtful cases it is best to omit the cell from the count, but such omissions should not be more than 5 per cent of the sample.

The significance of the Arneth count depends on the fact that the figures are remarkably constant in health, and when the individual has not been exposed to any great changes of environment. When, however, microbic disease is present the polynuclear picture is changed for the numbers of cells in Class I, i.e., those with one lobed nuclei, and in Class II, or those with two lobes, increase, with a consequent diminution of the numbers in Classes III, IV, and V. If the first two classes are added together the number obtained varies normally between twenty and forty, and a percentage above forty is evidence of the presence of an infection or a

toxæmia.

At first sight, it would appear that this method is of interest only to the clinician or the pathologist, but its biological importance is much greater than this, for it affords an additional way of attacking the fascinating problem of the white cells of the blood and their fluctuations, about which we know far too little. As well as micro-organisms the following agencies can affect the count (that is affect the production of polymorphs), x-rays, ultra-violet rays, the administration of certain drugs such as thyroid, colchicine, and the exposure to certain anæsthetics

A discussion of the biological implications of the method cannot be entered into here, and it must suffice to say that it is well established that polymorphs enter the blood as cells of the first two classes, and leave it from the last two; but the problems are many, and an excellent field of research is offered to anyone possessing a microscope with an oil-immersion lens, and the fortitude to prick his finger in the cause of science.—Walter P. Kennedy, Ph.D., F.R.S.E., in Watson's Microscopic Record, 1927, xii, 3.

Abstracts from Current Literature

MEDICINE

Researches into the Number of Blood Platelets in Cancerous Subjects. Rud, Einar (Proceedings of Danish Biological Society, Jan. 3, 1927) Comptes rend. soc. Biol., 1927, xevi (5), 364-366.

This article first seeks to establish the number of blood platelets in healthy subjects. Naegeli quoted average normal values from a number of authors as ranging from 200,000 to 300,000 with extreme ranges at 130,000 to 750,000 and H. C. Gram found figures for mean values varying from 250,000 to 847,000 per cmm. This wide variation appears to indicate a lack of precision in the earlier technique. That employed has usually been that of O. Thomsen which is considered the best up to the present time. More recent workers have as a rule found lower values. Taking these later researches as a basis, the normal average of the blood platelets may be fixed at about 350,000, and the maximum normal at 400,000 to 450,000.

An enumeration of the number of blood platelets in cancerous subjects was carried out on 40 women suffering from cancer of the neck of the uterus, of ages varying from 24 to 65 years, and the greater number of whom ranged between 33 and 46 years. The method of O. Thomsen was followed in all the cases and is described by the author as follows: 4.5 c.c. of venous blood is withdrawn from the patient and run into a graduated tube in which it is mixed with 0.5 c.c. citrate of soda to make a 3 per cent solution. After allowing some 20 minutes for sedimentation of the erythrocytes, the citrated plasma which contains the thrombocytes still in suspension is drawn off, and is mixed in a ratio of 1-20 with 100 grammes of a solution of sodium chloride containing a few drops of formol. Seventeen enumerations in duplicate were made by the Thoma hæmocytometer.

Results.—Among the 40 cancerous subjects the average thrombocyte count was 463,000 per cmm. which exceeds the normal average by more than 25 per cent. The maximum observed was 842,000. Age appeared to have no influence upon the number of thrombocytes. The figures obtained after hæmorrhage indicated that factors which lead to anæmia contribute to the development of a thrombocytosis. In general it was concluded from these experiments that patients suffering from cancer of the uterus have an increased number of blood platelets, the increase often reaching above 25 per cent. The largest increase was observed in the most serious cases in which the disease was complicated with anæmia, and here the increase was around 50 per cent of

the normal figure. Beyond this, the observation did not appear to be of prognostic or clinical value.

M. E. Abbott

Heredity in Relation to Cancer. Cockayne, E. A., The Cancer Review., 1927, ii, 338.

This is a very valuable paper in which the author attempts to sift the evidence derived from the study of cancer in man and the lower animals, with a view to determine to what extent heredity plays a part in the etiology. The work of Slye, Tyzzer, and Lynch is analyzed in some detail, and there is considerable discussion on the hereditary character of such affections as polyposis intestini, diaphysial aclasis, multiple neuro-fibromatosis, epiloia, retinal gliomata, and epitheliomata and endotheliomata of the skin.

The author concludes that there are a number of disorders of neoplastic character, met with in man and animals, which are inherited as Mendelian dominants or recessives. They form a graded series, beginning with those in which cancer rarely or never develops, and ending with those in which it almost always develops. There is evidence that in some of these disorders external causes, such as injury or irritation, are factors in causing benign growths to become malignant. Isolated cases of some of these disorders seem to be as common as hereditary ones, and hereditary ones often appear to spring from normal parents. These may be mutations, but the evidence is cumulative that in the case of those which are dominants some heterozygotes easily pass unrecognized. The presence of a modifying character may account for the partial or complete suppression of dominance in such disorders. It cannot be gainsaid that a definite proportion of cancers do arise on the basis of hereditary disorders of various kinds, though exactly what proportion these bear to the whole number of cancers met with, it is at present impossible to say.

Experiments on animals show that an inherent cell-defect is not necessary for the production of malignant growths, and that chronic irritation may cause them to develop in normal tissues. There may be an inherited susceptibility to cancer in normal tissues, and in the case of some animals there is already experimental evidence to this effect, but at present it is too scanty and incomplete for it to be reviewed with advantage.

A. G. NICHOLLS

Insulinartige Pflanzenextrakte. (Extracts of Plants Resembling Insulin). Kauffman, E., Zeitschr. f. d. ges. exper. Med., 1927, lv, 1.

The use of a tea made from Phaseolus vulgaris

and multiflorus was investigated in rabbits and in diabetic patients in regard to its effect on the amount of blood-sugar. The tea was made by soaking one cupful of the finely cut stems and pods of the plants in four cupfuls of water over-night; in the morning the mixture was boiled for ten minutes. On the rabbit, when in a state of hunger, the effect of such extracts was to materially reduce the amount of blood-sugar. Similarly, the hyperglycæmia produced by alimentation and adrenalin in rabbits was reduced and the period of their persistence shortened.

In fifteen diabetics four cupfuls of this tea given daily benefited especially the acidosis, but also improved the carbohydrate tolerance by 30 to 40 grammes. Mild cases were rendered at times sugar-free. In three diabetics with arteriosclerotic contracted kidney, the results were nil. No toxic manifestations were observed.

A. G. NICHOLLS

Mucous Colitis Due to Food Allergy. Hollander, E., Am. J. M. Sc., October, 1927.

Allergy is an altered reaction of tissue cells to foreign chemical agents. The author includes the gastro-intestinal mucosa among the tissue that will react, mucous colitis being the clinical result. This means the formation of large quantities of abnormal mucus with some inflammation of the mucosa. Patients with this condition complain of pains along the colon; gas distension, alternating with diarrhea and constipation; they are neurotic, mentally depressed and physically weak. The correct diagnosis is often missed because the stools are not carefully observed -- nor the sigmoidoscope used -- the mucous membrane has a dry glazed look with patches of adherent mucus.

The author claims that a considerable proportion of these cases are the result of sensitization to certain foods. By dermal tests he ascertained which foods produced a reaction and in the five cases he cites abstinence from these foods produced relief from previous symptoms. The five case reports including results of treatment are given. In all cases other remedies had failed. They all showed constipation or diarrhea, or both, and seem to have been very much of a type.

P. M. MACDONNELL

L'Insuline et l'Hypercholestérinémie. (Insulin and Hypercholesterinæmia): Fellegi, Geo., Annales de Médicine, Oct., 1927, xxii, 330.

This paper states and discusses the theories that have been advanced relative to the origin and metabolism of cholesterin in the body. It particularly considers the action of insulin on the states of cholesteroluria, cholelithiasis and calculous cholecystitis.

The following are the author's conclusions:-

1. Insulin lessens the amount of cholesterin in the blood when it is abnormally high.

2. Insulin reduces functional inefficiency of the hepatic parenchyma; transforms part of the blood cholesterin into cholalic acid; it lessens the tendency to the formation of biliary calculi; it tends to prevent irritation of the mucous membrane of the biliary passages, and favours the cure of hypercholesteroluria.

3. Insulin fixes the cholesterin as well as the

fats in the tissues.

4. Insulin inhibits the power of the adrenals to produce cholesterin.

5. Insulin stimulates the distinctive power of other organs in regard to cholesterin.

He thinks that treatment by insulin is beneficial in cholelithiasis, cholecystitis, and in simple calculous jaundice, as well as in diabetes. A. G. NICHOLLS

Les Infiltrations de Cellules Lymphatiques et la Néoformation des Centres Lymphopoiétiques Régionaux dans l'Evolution de l'Epithéliome de la Langue. (Infiltration with Lymphatic Cells and the New Formation of Regional Lymphopoietic Centres in the Evolution of Epithelioma of the Tongue). Calvanico, Raffaele, Acta Chir. Scandinavica, 1927, lxii, 276.

This paper has some important bearings that do not appear on the surface. It has been noticed that in the experimental inoculation of carcinomas a zone of lymphocytic cells is formed about the transplants in cases that are "taking." In cases when the transplants retrograde and disappear, a zone of leucocytes and fibroblasts, characteristic of an ordinary reactive inflammation, becomes manifest, lymphocytes being inconspicuous.

The injection of olive oil and certain lipoidal substances into rats also brings about a lymphocytic reaction. The explanation of this peculiar behaviour of the lymphocytes is not entirely clear. Is it a resistance-phenomenon, specific of carcinomatous invasion? Or, is it only secondary to the manufacture of lipoidal substances by the active or retrograding (and necrotic) cancer cells, and a reaction thereto?

It is well-known to pathological histologists that the regional lymph-nodes are frequently enlarged in cases of cancer, so much so as to be regarded by the surgeon as invaded by cancer, yet, under the microscope, a simple hyperplasia

of the nodes alone is found.

Calvanico has studied these phenomena in the lymph-nodes and connective tissue of the submaxillary region in cases of epithelioma of the tongue. He finds: (1) that the regional lymphnodes present marked hyperplastic phenomena, frequently reflected upon the neighbouring connective tissue; (2) that in the perinodal connective tissues, it is possible to recognize formations of lymphoid type, gradually approaching still more specific types of tissue, such as: (a) simple infiltrations of lymphatic cells; (b) tufts of lymphoid tissue; (c) neoplastic formations of true lymphopoietic centres.

In the constitution of these different formations hæmatic as well as local elements take part.

The author concludes that these glandular formations are an expression of antitoxic, filtering, and phagocytic activity, but also may be considered as regeneration and substitution elements for the lymphoid tissue destroyed by the neoplastic process.

A. G. Nicholls

SURGERY

Acute Perforation or Rupture of the Gall Bladder. Alexander, Emory G., Ann. Surg., Nov., 1927.

Perforation or rupture of the gall bladder is not very common, but occurs more frequently than is generally supposed. The author has made a study of twenty cases of perforation occurring in the last 1,000 cases of diseases of the gall bladder admitted to the surgical wards of the Episcopal Hospital. In most instances the actual perforation was demonstrated at operation, while in others the diagnosis was made on the presence of gall stones or bile in the walled-off or free peritoneal cavity.

There are two groups of cases: first, perforation into the free peritoneal cavity; and second, subacute perforation localized by adhesions. There were eight of the first group and twelve of the second. Perforation of the gall bladder into a hollow viscus is not included in the

number

The correct diagnosis of acute perforation of the gall bladder is not common. history of the patient is important and particularly the history of repeated bilious vomiting, which was noted in all twelve. In addition to this, there is the history of previous digestive trouble of the gall bladder type. Jaundice is of little or no importance. The blood count is indicative of severe infection and, in the three patients in whom the perforation occurred during the course of typhoid fever, the blood count ranged from 6,200 to 24,600, and in others from 19,800 to 28,000. The symptoms on examination resemble very much those of perforated duodenal or gastric ulcer with a sudden onset of acute pain and abdominal rigidity. As the case progresses, all the signs of diffuse peritonitis becomes manifest, at which time the etiology is, if anything, more obscure. longer operation is delayed after perforation the higher the mortality rate, which was 50 per cent in this series of acute perforation.

In subacute perforation the diagnosis is not so difficult. Vomiting was the clinical symptom common to all. Chills were present in two cases

and jaundice in three. A palpable mass was noted in 50 per cent. Although perforation was not diagnosed in any of this group, yet the gall bladder was regarded as the site of the trouble, the diagnosis being calculus or non-calculous cholecystitis. The mass of a periocholecystic abscess, when palpable, is exquisitely tender and is usually situated higher in the abdomen and nearer the midline than is an appendiceal abscess lying high in the abdomen. The operative mortality in the second group of cases was 25 per cent.

According to McWilliams, the mechanism of perforation may be due to various causes: (1) over-stretching, with or without the presence of stones; (2) pressure ulceration from a stone; (3) gangrene due to thrombosis of the vessels, cutting off the circulation due to pressure, or finally, diphtheritic, ulcerative infection of the wall. Carcinoma as a cause of rupture is very

unusual

Successful treatment depends on early diagnosis and early operation. The question arises whether to do a cholecystostomy or a cholecysteetomy, the latter procedure, of course, being the ideal. The procedure decided on at the time of operation will depend on the duration of the perforation, the age and the general physical condition of the patient. Statistics seem to favour cholecystostomy and this is also true in the cases of subacute perforation, reserving cholecystectomy for those cases in which the gall bladder is readily delivered from adjacent structures.

R: V. B. Shier

The Results of Operation for Duodenal Ulcer in Physicians. Balfour, Donald C., Ann. Surg., November, 1927.

This report on the investigation of results in physicians was compiled for at least two important reasons. First, the cases are well selected in that they represent the chronic case in which operation is clearly indicated, for, as a rule, a physician with a duodenal ulcer has tried out various forms of medical treatment repeatedly. This statement was backed up by the fact that hemorrhage had occurred in 40 per cent, whereas the incidence in laymen was 20 per cent. Obstruction was present in 32 per cent, whereas in laymen it was 18 per cent. Second, physicians have difficulty in carrying out any post-operative regimen which demands regularity in habits of living and eating.

The average age of the 100 physicians operated on for duodenal ulcer was forty-seven years; the average duration of symptoms thirteen years. Posterior gastro-enterostomy was performed in 80 per cent, excision alone in 6 per cent, anterior gastro-enterostomy in 3 per cent, and gastro-duodenostomy in 2 per cent. Excision was usually undertaken for the small duodenal ulcer on the anterior wall, when it could be excised by

cautery or knife without encroaching on the

The results of the various operations are summarized in an appropriate table and are as follows:

Anterior gastro-enterostomy Complete relief in 100 per cent Number of cases 3 Gastroduodenostomy Number of cases 2

Complete relief in 50 per cent; second operation in one case.

Number of cases 6 Complete relief in 33 per cent. Number of cases 89 Posterior gastro-enterostomy Complete relief in 87.6 per cent.

Five cases with posterior gastro-enterostomy may be listed as failures. In one a gastrojejunal ulcer recently necessitated operation. second, recurrence of symptoms has suggested gastrojejunal ulcer; this has not been confirmed. Another patient has had symptoms which he attributes to gall bladder disease. In another case, at the time of operation there was a large mass found at the pylorus which was thought to be duodenal ulcer. Three years later the patient returned to the clinic with what was apparently an inoperable carcinoma of the stomach. Finally, one patient reports that he has had no relief whatever since his operation.

Considering the entire group of cases in which gastro-enterostomy was performed, including two in which operation has been performed subsequently, the author finds that in 90 per cent the symptoms have been completely relieved; in 5 per cent greatly relieved; and, in 5 per cent no relief whatever has been obtained.

In five of the 100 cases a secondary operation has been performed, in two for recurring hæmorrhage (in one after excision and in one after posterior gastro-enterostomy); in one for reactivation of the ulcer after gastroduodenostomy, and in two for gastrojejunal ulcer.
R. V. B. Shier

Diverticulum of the Urinary Bladder. Pugh, W. S., Surg., Gynæc. & Obst., November, 1927.

Diverticula of the bladder have long been recognized at autopsy, but their recognition clinically was rare before the introduction of the cystoscope by Nitze. Much interesting study of the subject has been carried out within recent years and several writers classify diverticula into two types, congenital and acquired. It was thought that the congenital diverticula contained all the layers of the true bladder, while the acquired was said to be composed of fibrous tissue and epithelium. This classification, however, has not withstood attack and, while two types undoubtedly occur, they are now known as true and false respectively, the true diverticula being composed of all the

bladder coats, the false being limited to the mucous membrane.

The author has made a study of over fifty cases, and has been impressed by the fact that, in every instance in which a real diverticulum was found, there has been a urethral or vesical obstruction over a period of years. Diverticula have been seen to occur in almost every part of the bladder in both autopsy and clinical material, and they all presented a distinct defect in the bladder wall through which occurred a hernia. The incidence of the condition was 2 per cent of all cystoscopy reports, but another clinic reports as high as 5 per cent, while a third reports one-half of 1 per cent. There is a relatively greater frequency of the condition in the female.

The author asserts that from 70 to 80 per cent of diverticula are located near the ureteral openings and, while it has been asserted by some authors that diverticula located high up drain better and are more susceptible of treatment, yet the author is very doubtful regarding this theory. Practically all diverticula are infected, due to the presence of ammonia-split-

The symptomatology is lacking in characteristic features. Sooner or later all types of the condition produce symptoms with associated diverticulitis and peridiverticulitis. Double voiding, in which the patient apparently empties the bladder and then has a recurrent desire in a few moments, is the nearest to a typical symptom. The common symptom is the feeling of a ball which seems to rise and fall in the pelvis. If bleeding occurs, the author believes it is due to trauma, stone, tumour, or tuberculosis, and not caused by the sac proper.

The positive diagnosis, as a rule, rests with the cystoscopic examination, but the most exact is afforded by means of cystography. For the purpose of cystography the author prefers a solution of 5 per cent neosilvol to that of the 12 per cent solution of sodium iodide, and states that the former is much less irritating.

The prognosis of these cases, treated surgically, is good, but, when the diverticula become numerous, the possibilities of cure are remote.

The treatment is divided into palliative and radical, and is always operative, because conservative non-operative procedures accomplish nothing. In many cases a preliminary treatment, similar to that for prostatectomy, must be carried out. The principal methods of radical treatment at present are the intravesical removal of Young, and the combined intravesical and extravesical technique of Lower. The author of this contribution has been quite successful with the technique suggested by J. S. Read. R. V. B. SHIER

PÆDIATRICS

Pertussis. Huenekens, E. J., Minn. Med., Oct., 1927, x, 601.

Huenekens reviews the various measures for pertussis prophylaxis, including the use of convalescent serum, injections of whole blood, and pertussis vaccine. He concludes that pertussis vaccine is the best intrument for prophylaxis against whooping cough. It should be freshly prepared, that is not more than two to four weeks old, and should be given in doses of one billion, one and a half, and two billions every other day for three doses. Care should be taken that this freshly prepared vaccine contains different strains of bacilli and should have both the types demonstrated by Krumweide. The immunity, relative or absolute, lasts only a comparatively short time, so that the vaccine should be given only when there is a suspected exposure, or in the presence of a widespread epidemic.

R. R. STRUTHERS

ANÆSTHESIA

Spinal Anæsthesia; Report of Three Hundred and Ninety-two Cases. McMallin, J. J., Surg. Gynæc. & Obst., 1927, xlv, 649.

In this series there were two alarmingly severe reactions, but no deaths. In both instances the injections were made in the eleventh thoracic interspace. One of the patients appeared to be dead but was revived by means of an intravenous injection of normal saline containing adrenalin. There were no severe reactions when the injection was made below the second lumbar

interspace.

In ten cases adequate anæsthesia was not obtained, and in fourteen it was of too short duration to allow the operation to be completed without the help of general anæsthesia. The writer attributes the failure to obtain adequate anæsthesia to faulty technique, or to oversterilization of the anæsthetic. He uses novocaine and gives two grains to an adult, irrespective of age, weight and blood pressure. In abdominal surgery spinal anæsthesia is satisfactory because the relaxation obtained is complete and the amount of shock slight.

One patient, three days after operation, developed internal strabismus, which persisted for

several weeks and then disappeared.

For operations in the upper abdomen the in jections were made between the eleventh and twelfth thoracic vertebræ; and for the lower abdomen, between the second and third lumbar W. R. HOWELL

Further Clinical Experiences with Ethylene-Oxygen Anæsthesia. Herb, I. C., Current Researches in Anæsthesia and Analgesia, 1927, vi, 258 et seq.

Ethylene anæsthesia has been used at the

Presbyterian Hospital, Chicago, more than one thousand times in the last two years. Dr. Herb has administered this gas without ill effects in patients suffering with severe myocarditis, auricular fibrillation, valvular diseases of the heart, aortic aneurism, diabetes, and acute and chronic diseases of the lungs. It is an ideal anæsthetic in the second stage of labour because it does not stop uterine contractions. Ethylene does not produce relaxation of the abdominal muscles. Ether is far better for operations in the upper abdomen. The percentage of oxygen which should be used with ethylene varies with the purity of the ethylene and the age and physical condition of the patient. If, with an abundant supply of oxygen, there is cyanosis, the fault may be with the ethylene, which is not sufficiently pure for use as an anæsthetic. The degree of oxygenation must be judged by the colour of the blood. The colour of the face, lips or ears cannot be relied upon. The margin of safety with ethylene is much less than with ether; a few inhalations of a concentrated vapour may cause death from asphyxiation. The smell of ethylene is not offensive to the patient if the gas is pure, and if the administration is begun with a high percentage of oxygen (40-50 per cent). There is more sickness after the inhalation of gas from some cylinders than from others. Vomiting also occurs more frequently when a full tank is first used. The writer describes the somewhat elaborate precautions used at the Presbyterian Hospital to eliminate danger from static W. B. HOWELL sparks.

Studies of Respiratory Reflex Effects of Anæsthetics: 1. Comparison of Irritant and Nonirritant Types. Dooley, M. S., and Wells, C. J., Current Researches in Anæsthesia and Analgesia, 1927, vi, 278.

Irritants applied anywhere from the nares to the lower limit of the larynx cause inhibition of respiration and circulation with general vasoconstriction. Below the larynx they cause rapid respiration, acceleration of the heart and a fall of blood pressure. Since these effects can be prevented by cocainization of the upper part of the respiratory tract and of the vagi they cannot be due to action exercised after absorption. Ether, chloroform, ethyl and methyl chloride, ethyl bromide, somnoform and anæsthol, all have an irritating effect upon the respiratory passages. They also have a centrally depressing effect. It is because of their irritating effect upon the upper respiratory tract that they take longer than the gas anæsthetics to produce anæsthesia. Carbon dioxide is irritating in the same way as ether and chloroform. Nitrous oxide, ethylene and propylene are quite free from this W. B. HOWELL irritating effect.

Obituaries.

Dr. Arthur M. Derome died at his residence in his fifty-third year, after a short illness, and his death was quite unexpected. Born at St. Jacques le Mineur, he was educated at Joliette College and Laval University, graduating in medicine in 1899. He was later an interne at the Notre Dame Hospital in Montreal and from 1902 to 1905 headed the laboratory department in that institution. He was later connected with the Miséricorde Hospital and in 1910 started in private practice.

Dr. Duncan Murray, of Pictou, died suddenly at his home, December 21, 1927. Dr. Murray graduated in medicine at Dalhousie in 1896. He was a large, robust-looking man, and, until within recent years, seemed to possess an unusually good physique. After the outbreak of war he enlisted for overseas service, and spent much time in active work at the front. Apparently, the stresses of war broke down his physique, and when he returned after the armistice it was found that his heart had suffered. It was necessary for him to go very carefully from that time on. Dr. Murray was very highly regarded by all who knew him, both because of his kindness of heart, and of his professional qualifications.

Dr. Eric Simpson, formerly assistant professor of biochemistry at McGill and well known at the university and in Montreal, died at Philadelphia recently. Dr. Simpson left McGill in 1924 to assume a professorship at the University of Pennsylvania and had occupied that position ever since. He was still a young man and profound regrets were expressed at McGill, that he had been cut off in his prime. Those who knew him at McGill regarded him as a fine scholar and a man endowed

with rare qualities which had endeared him both to staff and students during his stay here.

Dr. William Tobin, died at Halifax on December 24, 1927. His death marked the termination of a medical career of nearly sixty years. Dr. Tobin graduated at Dublin in 1868. He carried on graduate studies for some years in Paris and other continental cities, and was admitted to the Fellowship of the Royal College of Surgeons, Ireland, in 1882. He later entered into military life as a medical officer, being advanced from post to post until he retired from the Army Medical Corps several years ago with rank of Colonel. His army associations gave him a wide first-hand knowledge of the world, and, as he was a keen observer, he acquired a great deal of extremely interesting knowledge. He was a modest, but nevertheless sociable man, whose culture and invariable courtesy marked him out as a worthy representative of the Old School. Although he retired from practice several years ago, his interest in professional things persisted, and he got much pleasure in discussing the newer developments in medicine.

Dr. M. O. B. Ward, for 21 years statistician of the City Health Department, Montreal, died at his home recently, following an illness of one month. Graduating from McGill University in 1876, Dr. Ward started in as owner of a drugstore for a short time and later started a practice specializing in skin diseases. During the smallpox epidemic of 1885 he was in charge of an emergency hospital on Moreau Street. Of late Dr. Ward has been zoning the city for cancer and doing other work in connection with that disease. In the literary field Dr. Ward has to his credit "Criminal History of the World," and a novel entitled "Ellesmere."

Mews Items great britain

THE ROYAL SOCIETY

FOULERTON RESEARCH PROFESSORSHIPS Regulations

1. Appointments will be made by the President and Council of the Royal Society on the recommendation of a specially appointed Committee of Fellows called "The Foulerton Research Fund Management Committee."

2. The duties of the holder of a Foulerton Research Professorship will be to conduct, in a place approved by the Committee, such original researches in medicine, or the contributory sciences, on lines approved of by the Committee, as shall be calculated to promote the discovery of the causes of disease and the relief of human suffering.

3. In awarding Professorships regard shall be had primarily to the ability of the individual rather than to the subject of his research, provided only that the subject of research is one permitted by the Regulations. Professorships shall be awarded only to candidates who have shown outstanding ability for independent research.

4. It shall be the duty of a Professor to devote his whole time to research, except that he may give a limited course of instruction in the subject of his research to advanced students; and any award shall

be made subject to its being found possible to make suitable arrangements for the research being carried out at a university or other approved place.

5. The stipend of a Professor, except as provided in Regulation 6 below, and except for the contribution from his stipend required under the scheme mentioned in Regulation 11 below, shall be at least £1,400 per annum.

6. In special cases, Regulations 4 and 5 notwithstanding, the President and Council may appoint to a Professorship the holder of a paid academic or other scientific appointment, provided they are satisfied that the duties of such other appointment occupy only a subsidiary portion of the applicant's time, and that its retention would not interfere with the discharge of the duties of the Professorship as essentially a whole-time appointment. In such cases they may order the payment of such stipend as they may think fit, provided that the total annual income of a Professor from such paid appointment, together with the stipend paid him from the Foulerton Research Fund shall not be less than £1,400, except for the contribution from his stipend required in Regulation 11 below. No Royal Society Professor shall accept or hold any appointment, paid or otherwise, other than his Royal Society Professorship, except with the knowledge and approval of the President and Council.

7. A Professor shall be appointed for a period of five years, the appointment being renewable on the application of the Professor for further successive periods of five years, provided that the President and Council are satisfied that the Professor is competent to discharge the duties of his Professorship and is not neglecting these duties, except that when a Professor is over 55 years of age, appointment or renewal shall be only for the period until he attains the age of 60

8. Save as is hereinafter in this Regulation provided, a Professor shall vacate his Professorship on attaining the age of 60, except that the President and Council shall have power, byt the vote of two-thirds of the members present at a meeting of the Council held within six months before the date on which the Professorship would otherwise be vacated, to extend the appointment for a period not exceeding three

years, and so on from time to time.

9. In special cases, Regulations 7 and 8 notwith-standing, a Professor may be appointed for a limited period of years without the opportunity of renewal at the end of this period, but the level of ability demanded in these special cases must not be lower than that demanded from other Royal Society Professors.

10. If at any time in the opinion of the President and Council a Professor is found to neglect or to be unable to discharge the duties of his appointment or to be guilty of conduct or of continuing a course of conduct unbecoming in the holder of a Royal Society Professorship, the President and Council shall have power at once to terminate his Professorship.

11. Unless the President and Council order to the contrary, provision shall be made for the superannuation of each Professor under a contributory scheme to be approved by the President and Council.

12. Should a member of Council or of the Management Committee become a candidate for a Professorship, he shall, ipso facto, vacate his membership of Council or of the Management Committee. A Professor shall not be eligible for service on Council or on the Management Committee during his tenure of a Professorship.

13. The President and Council may make grants to a Professor towards the various expenses incurred in his research, such as the purchase of apparatus and payment for assistance, provided they are satisfied that it is not possible to meet these expenses from other sources.

14. Members of all nationalities and of both sexes shall be eligible, and in these Regulations words importing the masculine gender shall include the feminine

15. The President and Council reserve the power from time to time to make new regulations for the administration of the Foulerton Research Fund. 16. Candidates should state their age and the

lines of research in which it is proposed to engage. 17. Applications (marked outside "Foulerton Professorship") must reach the Royal Society not later than September 30th next. THE ROYAL SOCIETY

Burlington House, London, W.1.

An enquiry was held recently by the City Coroner at Southwark in connection with the death of Elsie and Marie Dodgson, twins who were born joined together by the head on December 10, 1927, and who died at Guy's Hospital on December 22nd, following an operation by which it was hoped to separate them.

The Coroner, who was a medical man, stated that so far as he knew, there were only fourteen such cases The twins were joined by the vertex of on record. the head solely, with their bodies pointing in different directions. If allowed to grow up in that condition the sisters would, owing to their peculiar position, be unable to sit or stand, for if one sat or stood the other would be on her head with her feet in the air. In order to feed one of them in the ordinary way, the other sister would have to be in an inverted postion. If kept perpetually on their backs, there would be a risk of the development of hypostatic pneumonia.

These facts made is imperative that operative measures should be attempted for their relief, particularly as one sister was clearly going downhill rapidly, while the other, though by no means robust, seemed to have a reasonable chance of surviving. While the vertices were joined, it did not appear that the bones of the skull were united at the point. brains, though separate in themselves, lay in contact with one another. Death was due to shock,

GENERAL

"The second International Congress of Radiology will take place in Stockholm, July 23 to 27, 1928. Dr. Gosta Forssell, the President, has approved of five delegates from Canada, as follows: Dr. A. Stanley Kirkland, St. John N.B.; Dr. G. H. Malcolmson, Ed-monton, Alta.; Dr. George McNeill, London, Ont.; Dr. H. H. McIntosh, Vancouver, B.C.; Dr. A. H. Pirie, Montreal, P.Q. These delegates were appointed by the President of the Section of Radiology of the Canadian Medical Association. They will travel to Stockholm and attend the Congress as delegates from Canada. Other radiologists from Canada wishing to attend the Congress will find information regarding tours to Stockholm in the December number of the American Journal of Roentgenology and Radium Therapy. tours will be taken by radiologists from the United States. A Canadian tour is being arranged in Montreal by W. H. Henry Limited, 286 St. James Street, to whom application should be made for further information.

We are asked to call attention to the spring itinerary of the Interstate Post-Graduate Association of North America, which commences on May 16th, and makes a tour of the southern and medical centres in the United States, including St. Louis, Nashville, New Orleans, Texas, California, Colorado, Nebraska, and Minnesota. The teaching staffs in the universities of these cities have arranged for scientific and clinical programmes for the benefit of their visitors. This itinerary is open to all physicians, including Canadians, who are in good standing in their state and provincial societies, and may include also members of their families. The assemblies will be operated on an all-expense plan, and the rates quoted cover every necessary item of expense on the trip. Dr. W. B. Peck, of Freeport, Illinois, is the managing director and will answer all enquiries.

NOVA SCOTIA

A recent report indicates that the management of the Aberdeen Hospital, New Glasgow, has succeeded in very materially improving the financial situation of that excellent institution. For several years there has been marked business depression in the constituency served by this hospital, and its receipts suffered in consequence. The hospital has had a fine record, and, despite the discouraging circumstances of late years, has maintained its high standard. It is therefore gratifying that the dark days seem to have passed, and that the outlook is now very encouraging.

The Nova Scotia Tuberculosis Commission continues to press the work of organization throughout the province. The endeavour is being made to secure the complete co-operation of all city, town, and municipal bodies. This requires a great deal of travelling on the part of the commissioner, Dr. Joseph Hayes. Thus far, the programme of the Mission has met with very general approval, and the indications are that the municipal co-operation necessary to permit of the construction of tuberculosis pavilions in connection with several general hospitals will soon be obtained. Construction work may be expected to begin forthwith. Meantime, the Commission continues to search for cases, to provide assistance to needy persons who are being treated at home, to arrange for hospital accommodation where possible, and in various other ways to combat the white plague in Nova Scotia.

A rather sharp outbreak of typhoid fever at Stellarton led to an investigation which disclosed

pollution of the town water supply. The characteristics of the outbreak pointed strongly to water-borne infection. A chlorinating plant has been ordered, and pending its arrival and installation, the usual advice relative to water used for drinking purposes has been given.

Dr. F. E. Lawlor, Medical Superintendent, Nova Scotia Hospital, accompanied by Mrs. Lawlor, is spending several weeks in the Tropics.

Dr. T. M. Lovitt, with Mrs. Lovitt, of Yarmouth, sailed recently for the Old Land, en route to South Africa, where they propose spending the winter.

Dr. A. R. Campbell, of Yarmouth, returned recently from an extended trip, which included several of the noted European hospitals and medical teaching centres.

Dr. Gordon Bruce, of Shelburne, who has been on the staff of the Hermann Knapp Memorial Hospital, New York, left early in the year for a prolonged period of graduate study at Oxford and elsewhere.

Drs. E. Kirk Maclellan and John Rankine, old time football stars, have acted as coaches for the Dalhousie football team during the season which has just ended. They have had the satisfaction of seeing their team win both the Halifax and Maritime Rugby Championships. The team was invited to go to the Pacific Coast for several matches there, and was accompanied on this trip by Dr. Rankine. W. H. HATTIE

PRINCE EDWARD ISLAND

Weekly meetings of the general and special committees in connection with the approaching Canadian Medical convention are being held in Charlottetown in their rooms in the Queen Square School. At a recent meeting the President-elect, Dr. S. R. Jenkins, read a communication from Mr. Melanson of the Canadian National Railways, concerning ferry transportation and Pullman accommodation at the time of the convention. The President was instructed by the meeting to confer with Capt. Read, the genial and obliging Master of the Car Ferry steamer, in order that suitable arrangements will be assured for transporting the numerous automobiles to the Island on June 18th. An excellent article, written by the Hon.

Mr. Justice Arsenault, was read before the committees. It gave a brief history of Prince Edward Island from the time of its discovery and described the many attractions for tourists such as summer hotels, surficeaten shores with their beautiful bathing facilities, and the many points of interest, some of which have become historic. Reference in it was made to the many sons of this land who have occupied important positions in our great Confederation and also to some who have gained distinction under other flags.

These weekly meetings are being well attended, and the different committees are gradually getting their several departments into shape.

NEW BRUNSWICK

On completion of the new Hotel Dieu Hospital at Moncton regular chest clinics will be held there under the direction of Dr. G. J. Wherrett. Free x-ray examinations are being provided for through the efforts of the Moncton Gyro Club.

At a meeting of the Commissioners of the Jordan Memorial Sanitarium, held at Riverglade on January 8th, it was reported that the new addition to the Sanitarium will be ready for occupancy on January 15th. There is already a considerable waiting list. It is interesting to note that one of the local newspapers has almost completed a fund by popular sub-

scription to provide money for a high class radio plant with ear phones for each patient at Riverglade. This form of entertainment is peculiarly fitted for patients in these institutions, and is very much appreciated.

At the annual meeting of the Saint John Health Centre it was reported that the attendance at the clinics for 1927 was in excess of 19,000. Inoculation clinics have been increasingly valuable this year. In addition to the usual small-pox vaccination, a large number of children have been immunized against scarlet fever and diphtheria.

Dr. R. A. Hughes, of Saint John, has returned from a visit to western Canada, where he has spent some time with his father in Brandon.

His friends will be distressed to know that Dr. C. M. Kelly, of Saint John, has suffered a hæmorrhage into his right eye, which will confine him in a darkened room for at least a month. Slight improvement has already been reported by the specialist in charge.

At the annual meeting of the Commissioners of the General Public Hospital of Saint John, Dr. John B. Nugent was appointed to fill the vacancy on the surgical staff. Dr. R. M. Pendrigh and Dr. Geo. Skinner were appointed to fill vacancies on the medical staff

Dr. G. A. B. Addy has been re-elected president of the Saint John Health Centre. It is recommended this

year that the city buy the building at present occupied by the Health Centre.

Dr. H. E. Britton of Moncton has been called to England by illness in his immediate family.

The profession in New Brunswick has been in receipt of several monthly copies of the Nova Scotia Medical Bulletin by courtesy of the profession in Nova Scotia. This journal deserves much credit for the excellent articles it contains, especially in relation to the coming meeting of the Canadian Medical Association in Charlottetown this June. It is attempting to ensure a very full attendance of all Maritime physicians.

Dr. G. A. B. Addy, of Saint John, has resigned his position as senior surgeon at the Saint John Public Hospital, and has been succeeded by Dr. L. M. Curren.

A. STANLEY KIRKLAND

QUEBEC

A meeting took place during the past week in the Faculty room at the McGill Medical Building, for the purpose of organizing an association of industrial physicians for this province. At this meeting a resolution was unanimously carried to the effect that McGill University, the University of Montreal, and the University of Laval of Quebec, should unite in promoting the interests of industrial medicine.

There has been a long-felt want for the instruction of students in the broad principles of industrial medicine, to fit them to take charge of the workers in industrial establishments, in a way that will be of benefit not only to the employees themselves but also to the industry. The course proposed at McGill is intended, not only to train specially a new group of younger physicians to undertake the care of industrial employees, but also to raise the standard of medicine and surgery required by all the great industrial estab-A course in industrial medicine will be offered to the profession by McGill University, beginning about March 1st. At the close of the meeting, an association was formed with the following as officers: Dr. A. R. Pennoyer, president; Dr. Harold Hibbert, head of the Department of Cellulose and Industrial Chemistry at McGill, and Dr. G. H. Hamel, as vice-presidents; and Professor F. G. Pedley as secretary.

The annual meeting of the Montreal Foundling and Baby Hospital took place on the 16th of last month. In the medical report it is stated that their mortality for the past year had been under 6 per cent. Of the 159 children who have been under treatment during the past twelve months, 33 had by adoption been placed in permanent homes. Of the admissions during the past year 29 were either sick or premature infants. The year had been a successful one from the viewpoint of the medical board. There had been no epidemics, and the general health of the infants had been better than ever before. Reference was made to considerable research work which had been undertaken on the suitability of the various substitutes offered for milk. The desirability of a cubicle ward for the observation of all cases when first admitted was pointed out. Appreciation of the work, and of the assistance of those who made possible so successful a year, was expressed at the meeting. The Vioray glass which had helped give the children adequate sunlight was mentioned as one of the contributing factors towards a low mortality rate. A graduate

nurse had been engaged for night-duty in the wards, and this too had helped. The medical report revealed that 159 babies were treated during the year. Dr. A. D. Blackader occupied the chair, and contrasted the conditions of fifty years ago, when the mortality rate among foundlings was 90 per cent. Dr. C. F. Martin praised the preventive work as one of the hospital's most important activies.

Dr. R. F. Ruttan, Dean of the Faculty of Graduate Studies and Research at McGill University, Macdonald Professor of Chemistry and Director of the Chemistry Building, has been appointed Emeritus Professor of Chemistry. A similar honour has been conferred upon Dr. A. B. Macallum, Professor of Biochemistry, who becomes Emeritus Professor of Biochemistry. The resignations of Dr. Ruttan and Dr. Macallum were accepted with regret by the governing body of McGill at its last meeting. Both have been associated with McGill for many years. The conferring of this honour on the two distinguished scientists adds two more to the present list of fourteen Emeritus Professors of McGill University.

We notice that in the will of the late Henry J. Elliott, K.C., a legacy of five thousand dollars has been bequeathed to the Kiwanis Charity Fund, while the balance of the estate is left to the Shriners' Hospital.

Dr. H. S. Birkett, C.B., has been presented with a gold medal by colleagues, in recognition of the place he holds in the esteem of ear, nose and throat specialists throughout America.

A suitable site for the erection of a \$500,000 hospital in the City of Verdun is being considered. The proposed hospital will be under the supervision of the Sisters of Providence, and will be open to both Catholic and Protestant alike. It is expected that the money for the erection and maintenance of the new hospital will come from the City of Verdun and the Provincial Government.

The following statement, lamenting the death of C. R. Hosmer, was issued by the executive committee of the Alexandra Hospital: "The members of the Executive Committee of the Alexandra Hospital, at this their earliest opportunity, desire to express their sorrow and sense of personal loss in the death of NEWS 239

Charles R. Hosmer, honourary treasurer of the hospital for many years, and a generous benefactor of the institution since its inception. On behalf of the governors of the hospital, they also desire to place on record their recognition of the warm interest always taken by him in the work carried on by the hospital, and their appreciation of the great assistance rendered by him to the institution in its many early difficulties,

not only by his advice and influence but also by his large personal contribution to its funds. They recall his regular attendance at all its board meetings, his kindness and optimism, and his persistent determination to have the hospital supplied with all means necessary to maintain its high standard of efficiency and success."

G. Hall

ONTARIO

There is a unique public health movement on foot in Toronto. Starting spontaneously at a gathering in Hygeia House, it originated as an effort on the part of private citizens to honour Toronto's veteran Medical Health Officer, Dr. C. J. O. Hastings, by giving some concrete token of their gratitude to him for long years of service. It was first suggested that a portrait of Dr. Hastings be painted and presented to the city, a proposal which met with the complete approval of the Mayor and City Council. A committee of outstanding men, both medical and lay, undertook to take charge of the effort and the raising of funds to make it possible. The original suggestion, however, has now broadened out, until it has more than a merely local significance and is a campaign which touches every one interested in the promotion of

public health.

The committee has decided that, in addition to the portrait, several Scholarships in Public Health will be endowed, by public subscription, at the University of Toronto, and that these awards will be named after Toronto's dean of health officers. There will be at least two of them and possibly more. So far, it has not been decided whether they will be open to undergraduate medical students, graduates who desire to do further research in public health fields, public health nurses, or to all three. Nor have details of the way in which the awards are to be made been settled. The most important feature of the entire affair, however, is the fact that it indicates an ever-growing consciousness of the importance of public health measures on the part of the average citizen, and that an effort of this sort, moreover, serves to further impress this on many who may not yet have fully realized it. The actual campaign is now under way, and, in it, members of the medical profession, and public health and welfare workers generally, are playing a major part. In case there should be any who have not yet been informed of the plan, they may secure further details from the Hastings' Scholarship Committee, Hygeia House, Toronto.

The members of the committee are: Honorary Chairman: Hon. Mr. Justice Riddell. Chairman: Colonel A. E. Gooderham. Honorary Secretary: Dr. Gordon Bates. Honorary Treasurer: Sir James Woods, Executive: Sir Joseph Flavelle, Bt., Mr. L. M. Wood, Dr. Herbert Bruce, Mr. J. J. Gibbons, Mr. E. R. Wood, Mr. Mark Bredin, Mr. C. S. Blackwell, Mr. J. E. Atkinson, Dr. J. G. FitzGerald, Mr. Hector Charlesworth, Dr. Duncan Graham, Mr. Frank O'Connor, Dr. C. L. Starr, Mrs. J. P. MacGregor, Dr. A. J. MacKenzie, Mrs. C. E. Burden, Hon. Forbes Godfrey, Sir Robert Falconer, Mr. H. H. Williams, and General Fotheringham. Subscriptions should be sent to Sir James Woods, 48

Front Street West, Toronto.

The annual meeting of the York County Medical Society was held at the York County Memorial Hospital at Newmarket, on the afternoon of Thursday, December 15th. The following officers were elected for the year 1928. President: Dr. S. J. Boyd, Newmarket. Vice-President: Dr. J. C. Devins, Aurora.

Secretary: Dr. J. Berry, Willowdale. Treasurer: Dr. H. B. Freel, Stouffville. The meeting was ably addressed by Dr. George S. Young, of Toronto, on "Mistakes in diagnosis," and by Dr. C. P. Johns, of Thornhill, on "The narcotic drug act and its application to general practitioners." The meeting was well attended.

With the Christmas and New Year vacations comes the usual slackening down of the activities of medical associations and teaching institutions. There were, however, two happenings of interest as concerns the Ontario profession; one, the meeting of the Historical Section of the Academy of Medicine on January 3rd, and the other, naturally of more general interest, the unveiling of an Osler Memorial Cairn at Dundas by the Hamilton Medical Society on December 28th.

At the Academy meeting, Dr. Gibson of Queen's University was the guest of the evening, and presented to the members present a long and interesting account of things medical in the Kingston district. Starting from the early days of the Frontenac settlement, Dr. Gibson described in an intimate and interesting way the practice and practitioners of medicine, and led the audience step by step into the final development of Kingston as a medical centre, with Queen's Medical Faculty as the inciting agent in the progress of medical teaching and activities now so evident in the limestone city. Dr. Gibson's researches had resulted in the findings of many things of historical interest, some of which, including the minute-books of the Kingston Royal College of Medicine, were on hand for inspection. It is not often that such a complete résumé of the medical activities of a district is so well presented, and Dr. Gibson's contribution is looked on as being one of the most scholarly and complete presentations of a historical subject which have been placed before any Canadian audience.

The presentation of medical curiosities and of medical publications of historical interest was made by various members. Dr. Leonard Murray gave an excellent description of Senac, physician to the Duke of Orleans at the time of the French revolution, and presented the two volumes of Senac's work on the heart, volumes of real value and interest, both for their antiquity and for the fact that they bear the

crest of the Duke of Orleans.

Dr. Pentecost presented the Academy with a British war-helmet, which had come from one of his patients passing through the field ambulance. The three holes in the steel helmet showed graphically, he said, what might have happened to the man had he been without the protection of the steel covering. Two of the missiles were found lying on the man's head, their force spent in passing through the light steel. Dr. Pentecost gave in addition a most interesting sketch of the history of the development of protective armour in war.

Dr. Ferguson presented a picture illustrating the first ovariotomy operation performed by Ephraim MacDowell in 1809. The interesting details of this

operation, so well known to most surgeons, were delightfully retouched by Dr. Ferguson, in his brief talk

which accompanied the presentation of the picture.

Dr. Jabez Elliott presented the report of the Library Committee, telling of their recent acquisitions, and describing those details in connection with various purchases which were most pertinent. Following the more formal part of the evening, Miss Poole, the librarian of the Academy, placed on exhibition the interesting collection of the works of John Hunter and of Harvey which has been growing so steadily as each year goes by, thanks to the activity of the farseeing and energetic Library Committee.

The Alumni Association of the Medical Department of the Western University, London, in addition to their ordinary activities, are collecting funds for the painting of a portrait of Dr. Waugh, the venerable dean of the profession in London. Dr. John A. Macgregor is chairman of the Portrait Fund Committee, a Committee which also includes such wellknown names as, Dr. J. G. Rowntree, of Rochester, Minn.; Dr. W. H. McGuffin, of Calgary, Alta.; Dr. W. F. Luney, Treasurer, and Dr. J. W. Crane,

Honourary Secretary.

At the December faculty meeting of the Medical School there was discussed the question of placing on the medical curriculum a course in Medical History. This was referred to a special committee. Dr. G. S. Tenant has been appointed Associate Professor of Psychiatry, to succeed Dr. G. H. Stevenson; Dr. W. J. McLean has been appointed as Associate Professor of Physiotherapy; Dr. Sinclair Battley has been appointed Instructor in Pædiatrics. Dr. Battley has been fulltime pædiatrician at the Ford Hospital, Detroit, previous to this he had been with Dr. Howland at the Johns Hopkins Hospital, and had been resident physician at both Toronto General Hospital and Yale University Hospital at New Haven.

A splendid meeting of the South Waterloo Medical Society was held at the Preston Springs Hotel, Preston, Ont. The attendance included all but three members of the profession in the district covered by this society. Dr. James S. Wardlaw (Trinity '88), who has been a faithful member of the society for many years, was absent through illness, and was missed very much, but we are happy to report that he is well on the way to recovery. The speaker of the evening was Dr. C. Stewart Wright, of Toronto, who spoke on "Infantile paralysis and the prevention of deformity," and also on "Pain in the back and its relationship to compensation." This address was full of practical suggestions, and was very much appreciated.

At a meeting of the Thunder Bay Medical Society, held on December 15th, the following officers were elected for the ensuing year: Honorary President: Dr. Geo. S. Young, Toronto. President: Dr. L. Y. Mc-Intosh, Fort William. Vice-President: Dr. J. M. McGrady, Port Arthur. Secretary-Treasurer: Dr. R. L. Harold, Port Arthur. Counsellors: Dr. J. C. Gillie, Fort William, and Dr. C. Powell, Port Arthur.

At the annual meeting of the Lincoln County Medical Association, held on Monday, December 19th, the following officers were elected for the year 1928: President: Dr. John Sheahan, St. Catharines. First Vice-President: Dr. W. H. McMillan, Thorold. Second Vice-President: Dr. G. T. Zumstein, St. Catharines. Secretary-Treasurer: Dr. N. P. Hill, St. Catharines.

At a meeting of the Niagara District Medical Association, held at Niagara Falls on December 8th, Dr. W. E. Gallie of Toronto gave a talk on "Sprains and dislocations."

A meeting of the Barrie District Medical Society was held in Barrie on December 8th. After the business of the evening was transacted Dr. William Magner of Toronto gave an address on "The pathology of still-birth."

On the evening of December 14th, the Dufferin County Medical Society met at Orangeville; the following programme was presented: "Pneumonia," Dr. W. E. Ogden, Toronto; "Obstetrical emergencies," Dr. W. G. Cosbie, Toronto.

At a meeting of the Huron County Medical Society, held at Goderich on December 14th, Dr. Geo. Hale of London gave a talk on "Diseases of the heart."

The Hamilton Medical Society met on December 15th. In addition to the cases presented by the local members, Dr. Geo. Boyer of Toronto gave an address on "Anterior poliomyelitis."

Dr. H. K. Detweiler, of Toronto, addressed the North Waterloo Medical Society at Kitchener on December 15th, his subject being "Asthma."

The York County Medical Society held one of its regular meetings at Newmarket on December 15th. Dr. Geo. S. Young, of Toronto, gave a talk on "Some common mistakes in diagnosis and treatment."

The Essex County Medical Society met in Windsor on the evening of January 3rd. An address was given by Dr. John Oille, of Toronto, on "The diagnosis, prognesis and treatment of cardiac irregularities.

N. B. GWYN

MANITOBA

Dr. Charles Hunter has been appointed Professor of Medicine in the Faculty of Medicine, University of Manitoba, in succession to the Honourable Dr. E. W. Montgomery, now Minister of Public Welfare of

Dr. B. M. LeBourdais, Educational Director of the Canadian National Committee for Mental Hygiene, spoke before the Canadian Club and the Local Council of Women on "The education and care of the feeble minded." At the latter meeting, in which the Winnipeg Health League co-operated, Dr. A. D. Mathers introduced the speaker. Mr. LeBourdais referred to what is being done for mental deficients in the various provinces of the Dominion, and to the Institution in Massachusetts, where very valuable work is being done for those unfortunate beings who come into the world with such a severe handicap.

NEWS

A preliminary meeting of the Local Committee of Arrangements for the meeting of the British Medical Association in Winnipeg in 1930 was held in the General Hospital on January 8th. Dr. W. Harvey Smith has been appointed Chairman of the Local Committee, and Dr. J. D. Adamson, Honourary Secretary. It is expected that Dr. Adamson will attend the meeting of the British Medical Association at Cardiff in June, in company with Dr. T. C. Routley.

The Annual Conference of the Public Health Nurses Department of the Manitoba Provincial Board of Health was held in the Parliament Buildings, Winnipeg, December 27th to 30th. Addresses by medical men were given as follows: Opening Address: Hon. Dr. E. W. Montgomery and Dr. M. S. Fraser; "Problems in infant care," Dr. O. J. Day; "Goitre, with special reference to children," Dr. Fahrni; "Maternal welfare," Dr. E. M. Douglas; "The pre-school child," Dr. Bruce Chown; "Cancer—a public health problem," Dr. N. J. Maclean; Clinic at the Shriners' Hospital, Dr. A. A. Murray; "Maternal and infant mortality," Dr. Ross Mitchell.

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Dr. Neil John Maclean and Dr. H. M. Murdoff sailed on January 7th, on the S. S. Adriatic, for a trip to the

Mediterranean.

Dr. C. R. Gilmour and Mr. A. Blackie, city chemist, presented a communication on "Methyl hydrate poisoning," before the Winnipeg Scientific Club on January 10th. The communication was based on eleven deaths following a drinking bout in the Coronation Block, Winnipeg.

SASKATCHEWAN

UNITED FARMERS OF SASKATCHEWAN PROPOSE THE ESTABLISHMENT OF FREE DIAGNOSTIC CLINICS

The establishment of a clinic for free consultation was proposed last spring when the Committee for the celebration of the Jubilee of Confederation was discussing plans. The idea was advanced by the Saskatchewan Section of the United Farmers of Canada. This body sent a circular letter to each physician in the province, but no letter was sent to the Saskatchewan Medical Association. At the September meeting of the Association it was agreed that no individual opinions be expressed by the physicians, but that they should act through their Provincial Medical Association. Before this September meeting a few physicians had sent in replies.

At the request of this section of the United Farmers, the Provincial Department of Health called a meeting in December to discuss the question of a free diagnostic clinic. Invitations to attend this meeting were sent to the Saskatchewan Medical Council, the Anti-Tuberculosis League, the Registered Nurses Association, the Local Council of Women, the Women's Labour League, the Provincial Council of Women, the Trades and Labour Council, the Catholic Women's League, the Rural and Urban Municipalities, the Red Cross, and the Hospital Association.

The meeting was opened by Hon. J. M. Uhrich, M.D., Minister of Public Health. The President and Publicity Director of the Saskatchewan United Farmers stated that free diagnosis was needed, particularly in the less settled parts of the country; that many people, the women especially, suffered in silence, rather than go to the expense of consulting a physician. The purpose behind the scheme was to get people to go for medical advice early rather than too late. Complete examinations, yearly, were advocated by the Farmers.

The Minister of Public Health stated that there was a tendency for medical men to congregate in cities, and as a result there was a dearth of medical treatment in outlying districts. Knowing this, the Government had enacted the Union Hospital Act. Municipalities, urban and rural, are empowered to engage a physician and a nurse on a yearly basis, and also to send patients to the

city or even out of the country for treatment. The Government grants fifty cents to each hospital per patient per day, public and private. Vaccines and sera are distributed throughout the province free of cost. Maternity grants of \$25 are given to patients who apply. Sixty free diagnostic clinics were held last year for preschool children in outlying districts.

Premier Gardiner set forth the difficulty in obtaining satisfactory medical services in a province 500 miles wide, and extending the same distance to the north, containing 800,000 people. The great drawback in outlying districts is the distance to be covered. The physicians expressed sympathy with the idea proposed, but made no suggestions. Finally a committee was appointed to investigate the feasibility of a travelling diagnostic clinic.

At the first meeting of the Council of the College of Physicians and Surgeons of Saskatchewan, subsequent to the recent election, Dr. E. R. Myers, Saskatoon, was elected President; Dr. H. E. Eaglesham, Vice-President; and Dr. A. MacG. Young, Saskatoon, was re_appointed Registrar.

The regular monthly meeting of the Regina District Medical Society was held at the Kitchener Hotel. Dr. G. J. McMurtry presented a paper on "Vertigo," which brought out valuable discussion and was greatly appreciated. Dr. R. L. King, Prince Albert, Dr. F. H. Hurlburt, North Battleford, Dr. R. A. McLurg, Wilkie, and Dr. A. MacG. Young, Saskatoon were guests.

Dr. Dunean Croll (M.D., C.M., McGill), L.M.C.C., is now associated in practice with his father, Dr. Andrew Croll, F.B.C.S., at Saskatoon.

Dr. H. A. Mitchell (M.D., Man.), L.M.C.C., has just begun practice at Wilcox.

Dr. J. T. O. Saucier, Saskatoon, who for some time has confined his practice to eye, ear, nose, and throat work, is taking further post-graduate work in Paris.

ALBERTA

At the annual meeting and dinner of the Edmonton Academy of Medicine, held at the Macdonald Hotel on December 14th, Dr. J. F. Folinsbee was elected President for the year, and Dr. B. R. Mooney, Secretary.

An organization meeting of Medical Officers of Health of the Province of Alberta was held on November 21st in Edmonton, and a new association, to be known as The Alberta Public Health Officials' Association, was formed. This association will include all Medical Officers of Health within the Province and Governmental services. The annual meetings are to be held at the same time and place as the Alberta Hospitals' Association and the Alberta Association of Registered Nurses, with which the new association is amalgamated. Dr. T. H. Whitelaw, M.O.H., of Edmonton, was elected President and Dr. Jenkins, Provincial Health Inspector, Secretary-Treasurer.

State Medical Service for Alberta .- At a meeting of the Provincial Constituency Association Convention of the United Farmers' Association, held on November 22nd, the travelling clinics carried on in Alberta under the Provincial Health Department recently were highly commended by the Hon. Mr. Reid, who expressed the opinion that more would be done along that line at the next provincial session. Following his address, the meeting adopted a resolution, as follows:—
"Whereas, the cost of medical service under the

present system is extremely prohibitive for the great

majority of the people; and

Whereas, the introduction and maintenance of an efficient and economical system is greatly to be desired, especially as regards points remote from hospitals and other facilities; and

Whereas, in Great Britain and other European countries, an efficient and economical system of providing for the administration of the function of public and individual health has been evolved in respect to the complete government control of hospitals, except private institutions, and of the forms and methods of treatment administered in such institutions; and

Whereas, a medical system operated and controlled by the State tends to eliminate unnecessary treatment in the form of too frequent surgical operations, etc., as well as any element of profit or advantage to practitioners who may be inclined to place such consideration before the welfare of the patient or the health of the

community;

Therefore, be it resolved: That this Convention is in favour of the Provincial Legislative Assembly adopting an act which is, as far as possible, a duplication of the Medical Act of Great Britain, and we recommend that the Minister of Health and a committee from the Legislature be appointed, and that they secure such data and information as may be necessary to accomplish this purpose:

and be it further resolved: That such a law be enacted and put into force at the earliest possible date." F. H. WHITELAW

It is with deep regret that we record the death of Dr. Daniel R. Dunlop, a graduate of Toronto University, and one of Calgary's most esteemed physicians. His passing is a great loss to his many friends in this province.

Dr. Evelyn Leacock of Calgary is now assisting Dr. G. H. Armstrong, of Gleichen, in the practice which he recently took over from Dr. A. W. Bowles, who is taking post-graduate work in London.

Dr. W. H. McGuffin, of Calgary, attended the annual meeting of the American Radiological Society in New Orleans. Following this meeting he visited, with members of this society, Panama and Jamaica.

General regret has been expressed throughout the province that Professor J. B. Collip will sever his connection with the University of Alberta next June.

The most active election for new councillors in the history of the College of Physicians and Surgeons of Alberta is now taking place. Members in four districts are voting for councillors for two year terms and in each there is a close contest. In one district there are three candidates. In years gone by usually few votes were cast. Since the establishment of elections in half of the districts each year, and during the annual meeting of the Alberta Medical Association, the councillors are able to get in close touch with the profession in the province who are taking more interest in medical affairs.

According to Mr. W. G. Hunt, Associate Secretary of the College of Physicians and Surgeons, there are several good openings in Alberta for physicians who are willing to do pioneer work on the prairies. He will gladly furnish information to those who are interested.

A new hospital is now being built in Edmonton for the Provincial Health Department, to care for the many cases of infantile paralysis requiring orthopædic treatment. Dr. F. Hastings Newburn, of the University of Alberta, will be in charge of this hospital, and a staff will be provided by joint arrangement between the Health Department and the University Hospital. According to Dr. W. R. Bow, Deputy Minister of Health, continued surveys, made since the recent epidemic of acute anterior poliomyelitis, show that such an institution is necessary and urgently required for the many crippled patients throughout the province.

The hospital, which it is expected will be ready for

occupation early in January, is being built at the south end of the University Hospital. It will be a temporary structure of one-storey frame construction, but will be

well-built and well-equipped.

Two wings, with administration quarters in the centre, will give accommodation to sixty patients. It has been estimated that this number will require treatment as soon as the hospital has been opened. Other less serious cases will be given care in their own homes. It has been stated that patients at this hospital will be given the advantages of the usual school privileges with competent teachers in the work of all the school grades.

Residents of the Vulcan district recently voted in favour of a municipal hospital.

According to a paragraph in the Journal of the American Medical Association of December 10, 1927, Dr. T. C. Routley, Secretary of the Canadian Medical Association, stated that Alberta had definitely gone into state medicine, since the Minister of Health of this province had informed him that the Department of Health could supply medical and surgical attention cheaper than people could buy it from the practising physicians. This probably refers to the travelling clinics organized by the Department of Health and manned by physicians in the government's employ. In this manner medical and surgical attention can be procured more cheaply than from the physicians in the many districts which this clinic may visit. That the Farmer Government has acted in an autocratic manner there is no doubt. have already expressed our opinion relative to phase of the government's activities and the hardship which is bound to ensue to many physicians in the province. Organized effort is the only means the profession of the province has to combat this menace.

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has been mentioned that the Hon. George Hordley, Minister of Health, has already prepared a Bill which he will present to the legislature for the definite establishment of state medicine.

G. E. LEARMONTH

On the evening of January 3rd, Dr. E. G. Mason addressed the members of the Calgary Medical Society, on the subject of "The recent treatment of general paralysis of the insane." This paper was of exceptional interest since it included not only Dr. Mason's personal experiences with the malarial treatment, but those obtained at the Provincial Mental Hospital at Ponoka as well.

At the annual meeting of the United Farm Women's Association, held in Calgary recently, the Hon. George Hordley, Provincial Minister of Health, spoke culogistically of the "travelling clinic" in Alberta, to which reference has already been made in the columns of this Journal. He stated that it provided a means of receiving the best possible surgical assistance in minor operations, at a considerably lower price than going to hospitals; and, moreover, the cost of these operations is almost one-third less than that charged by the medical profession throughout the province. He also stated that the government had no intention of interfering with the local doctor's business.

We learn that 2,346 tonsillectomies had been performed by this same "travelling clinie" which was inaugurated by the Government to take care of needy cases in outlying districts, but which has invaded some of the larger towns in the province where there are competent physicians well able to take care of all such cases. This is a form of state-medicine for which there is no possible excuse. To say that physicians in the towns are not in any way "interfered with" is begging the question. Our Minister of Health evidently has no sense of humour. If he has it is of a very grim type.

The recent elections of the Council of the College of Physicians and Surgeons of Alberta resulted in the following candidates being re-elected in each district: District No. 1. Dr. W. C. Anderson, of Wardlow.

District No. 3. Dr. W. C. Anderson, of Wardiow District No. 3. Dr. R. Parsons, of Red Deer. District No. 5. Dr. A. E. Archer, of Lamont. District No. 7. Dr. W. A. Wilson, of Edmonton.

At the annual meeting of the Edmonton Academy of Medicine the following officers were elected: President, Dr. F. J. Follinsbee; Vice-President, Dr. N. L. Terwillegar; Secretary, Dr. R. B. Mooney; Treasurer, Dr. J. L. Petticlerc. Executive Committee: Dr. Edgar Allin, Dr. J. C. Young, Dr. Gordon Gray.

BRITISH COLUMBIA

It is with great pleasure that the Executive has learned that a third grant of \$30,000, by the Sun Life Assurance Company, has been made to the Canadian Medical Association for extra-mural post-graduate medical education.

This company merits our warmest gratitude for its generosity, which has been expressed in so sensible and

practical fashion.

Following the plans of last year, we are working with the Vancouver Summer School committee to arrange a tour of speakers under this scheme which will coincide with the meeting of the Summer School in Vancouver in 1928. Our Secretary, Dr. Theo. H. Lennie, has written to Dr. T. C. Routley, Secretary of the Canadian M-dical Association, asking him to include Kamloops and Victoria in the itinerary. We are hoping, further, to have an autumn tour on similar lines, but with more time spent at each place. The large attendance at each of the meetings in 1927 shows the value attached to this work by the members of the profession in the various towns which were visited.

Dr. F. P. MacNamee, who has recently been in charge of Dr. Keys' practice, during the latter's absence in Vienna, is now associated with the Kamloops Clinic.

Dr. H. B. Rogers, of Chemainus, Vancouver Island, took a short holiday at Christmas, and was relieved by Dr. Frank McEown of Vancouver.

Dr. J. E. Affleck, who was for some years at Penticton, after about 18 months post-graduate work in Europe, is now practising at Nelson, specializing in ear, nose and throat work.

Dr. W. A. Coburn, of Nanaimo, is acting as assistant at Lake Cowichan for Dr. E. L. Garner of Duncan.

At the December meeting of the Vancouver Medical Association, held on December 6th, Drs. C. E. Sears and

K. H. Martzloff, of Portland, Oregon, were the speakers. Dr. Sears gave an interesting talk on "Some aspects of splenic disease," and Dr. Martzloff discussed the criteria for prognosis after operations for cancer of the cervix uteri.

Dr. G. O. Matthews and Dr. E. Johnston Curtis were elected to membership in the Vancouver Medical Association.

The January issue of the Vancouver Medical Association Bulletin contains an illustrated article describing the Hollywood Sanitarium, which has recently been enlarged and can now accommodate forty patients. This is the largest private institution caring for mental cases west of Ontario, and is equipped in the most up-to-date manner. It is situated in New Westminster, B.C. Dr. J. G. McKay of Vancouver is the Medical Superintendent.

Dr. Theo. H. Lennie gave an address on "The surgery of toxic goitre" at a meeting of the Vancouver Medical Association on January 3rd. Dr. H. H. Pitts, Pathologist to the Vancouver General Hospital, discussed the pathology of the thyroid gland.

Dr. Archibald Smith is leaving Vancouver in the middle of January for an extended stay in the Old Country. Before leaving, he presented a number of books to the Vancouver Medical Library.

Dr. H. A. Barrett has left for England, where he proposes to take a six months' course in physiology at the University of Cambridge.

Dr. Lavell Leeson, who has been abroad on an extended trip, during which he did post-graduate work in London, Edinburgh and Vienna, has returned to Vancouver and resumed practice, specializing in eye. ear. nose and throat work.

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Book Reviews

Outlines of Pathology in Its Historical, Philosophical, and Scientific Foundations. Horst Oertel, Strathcona Professor of Pathology, McGill University, Montreal. XVIII and 479 pages; 132 illustrations. \$10.00. Renouf Publishing Co., Montreal, 1927.

There is good authority for the statement that "of making many books there is no end." Books on pathology are no exception to this general rule. Not a few have appeared in recent years, large and small, pretentious and unpretentious, most of them having good points in their favour. It must indeed be difficult for the medical student to make a judicious selection out of the many imposing volumes offered for his approval. In fact, most of them are so packed with material, proved and unproved, that they are better adapted to the needs of the advanced worker. The beginner in the science of medicine may well be excused, then, if he finds him-self at once out of his depth. Furthermore, there are almost as many points of view in treating the subject as there are books. Any attempt to cope with these, on the part of the average person, is likely to result in surfeit and mental indigestion. This being the case, the author who ventures upon the troubled sea of textbook publication must have a faith within him, a conviction that he has something worth while to offer his readers; he must, to pursue our metaphor, feel that he is a safe pilot amid the unyielding rocks of fact and the shifting quicksands of theory. Otherwise, he has no raison d'etre as a writer of a text-book.

Having said this, we hasten to state that Professor Oertel has produced "something different." His aim is His aim is clearly set forth in the Foreword to his book, and this is to teach pathology not, primarily, as a practical medical or premedical subject, but as a scientific and cultural branch of knowledge, and to put it in its proper setting. The sharp limits within which he confines his effort are defined a little farther on, while he says that "the principal duty of pathology as a science has nothing to do with humanitarian or teleological aspects, or the relief of human ills, but solely with the determination of the lawful order and explanation of diseased life." In short, we may say that the main difference between Professor Oertel's book and most of the recent text-books on pathology is the fundamental difference between "education" and "instruction." No doubt, an ideal way to study any science is to collect and correlate facts, and then to formulate the laws that govern them, in short, to employ the inductive method. Certainly, in pursuing a modern medical curriculum the student is bombarded with facts, or supposed facts, but it is safe to say that he has little time to assimilate them, still less to comprehend their bearing. feeding, then, is too often the result. Under these circumstances the wise teacher will do for the student what the latter cannot do for himself; he will select the salient facts, will place them in the proper perspective, and will formulate the laws at work, in all this being careful to inculcate a proper method of approach. the student, instead of having to burden his mind with a plethora of facts, ill-assorted and undigested, which also he will speedily forget, is put in a position to use his own reasoning powers, and can enter on the study of his subject with intelligent interest. On this founda-tion he can build his own superstructure. This is Professor Oertel's point of view. He desires to lead his students to the threshold of his subject, and prepare them to enter it themselves. There can be no doubt that he is right, provided that this way of teaching is supplemented by adequate instruction in morbid anatomy and pathological histology, which, as is well-known, is eminently the case in Professor Oertel's course. He has thoroughly well accomplished the task he has set before The various topics he introduces are dealt with from the historical standpoint, and the evolution of our present-day conceptions of them is clearly traced. The result is a book that is illuminating and eminently readable. The chapters on "The Conception of Disease" and on "Heredity" are particularly worthy of note in this connection. Inasmuch as the author has endeavoured to explain how the various problems in pathology have arisen, and what their bearings are, rather than to attempt their solution, he calls his book a "guide" and not a "text-book." It is, therefore, to this extent in complete, but one good result is a volume of reasonable

It is, probably, possible, as a great English states-man is said to have remarked about the law, to drive a coach-and-six through any proposed classification in pathology, Dr. Oertel's is fairly simple. He deals first with etiology, discussing (1) the subjective (internal) factors of disease such as Disposition, Heredity, and Somatic Development; (2) the objective (external) factors, or environment, including the physical, chemical, and parasitic causes of disease. Then, he considers the various processes of disease, or pathegenesis, as they are manifested in the cell, the tissues, and the body as

a whole.

There has always been difficulty in placing disorders of the blood and circulation in any formal scheme. Dr. Oertel discusses them under the section on tissues, after his consideration of tumours. This is quite as good an arrangement as any. His discussion of internal secretion under the caption of "Disturbances of organic union" strikes one as a better plan than the more common one of classifying them under the Intoxications. The classification of tumours is on a histological basis, and is no more impeccable than others that have been proposed. Thus, the hypernephroma and the chorionepithelioma are dealt with in a special addendum interpolated for their accommodation. Again, the "cystoma" is hardly a tumour in the strict sense.

Some remarks in regard to terms seem to be called for. On page 13, allopathy, homeopathy, polypragmasia, eclecticism; and some others, are characterized as phantastic, opposing, and debating schools of medicine. The characterization is, of course, true, but the term "allopathy," if intended to refer to what we generally understand as the "regular" school of medicine, and we presume it is, is objectionable. It was coined by the homeopathists to designate the system of treatment which was "other" than homeopathy, the implication being that the "regular" (allopathic) school was inferior and actually wrong. Whatever may have been the state of affairs in the time of Hahnemann, no "regular" should now consent to be called an "allopathist." Our pride is in the fact that we believe our-The word "dystroplasia" is open to criticism. "Dystrophy" and "dysplasia" are, of course, well-known and frequently employed. Dr. Oertel employs "dystroplasia" as a synonym for "inflammatory growth." The word is not found in the medical dictionaries we have consulted. It is, moreover, faultily derived, and etymologically indefensible. "Dystrophoplasia" might pass, but is not desirable, as it embodies two differing concepts in the one term. "Dystroplasia" makes only for confusion. Such strictures as these do not, of course, seriously detract from a most excellent book.

Dr. Oertel's work throughout is a protest against the common tendency to tag on teleological and metaphysical concepts in the explanation of purely scientific phenomena. He insists, rightly enough, that in pathoscientific

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logy, as one of the natural sciences, the causes, development, and results of phenomena should be considered on mechanistic principles, and explained on the basis of natural law. In other words, natural science and metaphysics are totally different; their principles are incommensurate and should not be commingled.

Morbid anatomy and pathological histology, are, wisely, not treated of at length, but only so far as they illustrate the main thesis of the book. The illustrations are well-executed and clarify the text. To all the important sections notes and references to the leading authorities are appended. The volume, as a piece of craftmanship, has a pleasing appearance, and it is gratifying to note that Dr. Oertel has not deemed it necessary to go outside of Canada for its efficient production.

A careful study of this work confirms the first impression that, for the purposes of the student, it is easily the best that has appeared in recent years. It can heartily be commended as a scholarly, scientific, and altogether adequate presentation of a difficult subject.

A. G. NICHOLLS

Interpreters of Nature. Sir George Newman, K.C.B., M.D., D.C.L., LL.D., Chief Medical Officer, British Ministry of Health. 296 pages. Price, \$4.50. Oxford University Press, American Branch, New York, 1927.

This charming little book consists of a series of nine essays, written by Sir George Newman at various times and for different occasions, the thread which holds them together in an essential unity being the basic idea that the art and science of medicine are founded on the observation and interpretation of nature. The text about which the book is constructed is the well-known statement of Harvey, "I profess both to learn and to teach, not from the positions of philosophers, but from the fabric of nature."

The first essay deals in an illuminating way with the rise and development of the great university of Padua, and its influence on England through Linacre, Colet, More, and Harvey. The rebirth of experimental science and the foundation of modern medicine may be said to be due to the inspiration of Padua and the genius of its immortal pupil, Harvey.

Sydenham is next dealt with. He recalled the wandering thoughts and idle speculations of medical men to the observation of clinical facts. The ''bedside method'' of teaching medicine, and the correlation of clinical observation with post mortem findings, as taught at Leyden, with the influence of Boerhaave upon a distinguished band of pupils, which resulted in the foundation of the Edinburgh School of Medicine, are described in a broad and judical way.

John Hunter, as the most conspicuous example of the private practitioner, who was a pioneer in general biology and preventive medicine, is well portrayed.

biology and preventive medicine, is well portrayed.

John Keats; Apothecary and Poet, forms the subject of a most sympathetic and altogether delightful essay, full of cultured appreciation.

Perhaps the studies that are the most appealing to us are that on "The Character of Louis Pasteur" and "William Osler; a Physician of Two Continents," in which the personality and genius of these giants in achievement are thoughtfully, even lovingly, denicted.

The book ends with a retrospect of the marvellous advances that have been made during the last fifty years in the matter of Public Health, and an analysis of the intellectual and other forces at work at the present time, with their probable influences on the preventive medicine of the future.

The book is the product of a cultured and refined spirit, and exhibits a breadth of historical acquisition and a power of literary expression too seldom found in those of our cloth. It will be read with much pleasure and profit.

A. G. NICHOLLS

Gynæcology. Brooke M. Anspach, M.D., Professor of Gynæcology, Jefferson Medical College. Third edition. 751 pages, 532 illustrations. Price \$10.00. J. B. Lippincott Co., 201 Unity Bldg., Montreal, 1927.

The appearance of the third edition of this work in six years indicates its popularity. It is practically the same size as the first edition and contains, with a few exceptions, the same illustrations.

In this volume some of the newer diagnostic methods, clinical and laboratory, have been given proper recognition. Roentgenography of the Fallopian tubes, uterine endoscopy and a pneumoperitoneum are mentioned. The place of radium in the treatment of myoma and cancer of the uterus has been indicated. The use of the electrocautery in the treatment of certain disease of the electrocautery in the treatment of certain disease of the cervix has been properly included. The chapter on backache might well receive the attention of any physician. Unfortunately, a few "traditional" illustrations and methods have been retained in this volume. The genito-urinary tract appears to have received an undue share of attention in a work of this kind. In many chapters a successful effort has been made to co-ordinate clinical diagnostic investigations with those of the laboratory—a much needed procedure in the practice of gynæcology to-day. No emphasis has been laid upon the gynæcological conditions which result from unskilled care during labour and the puerperium.

during labour and the puerperium.

The bibliography following most chapters is excellent, giving a good opportunity for extended reading, but also an opportunity of creating a smaller and more concise text for students. The material in this work is good and graduates will derive much from it, but for the student it would seem preferable to dogmatize rather than to bewilder with too many methods very often of doubtful value in diagnosis and treatment.

J. D. McQUEEN

Pernicious Anæmia. Beaumont S. Cornell, M.B., (Tor.), Fellow in Duke University. Duke University Press, Durham, N.C., 1927. 6"x 9", xv, 311 pages.

Dr. Cornell has for a number of years been intensely interested in the problem of pernicious anemia, and has devoted the past five years to an intensive study of the disease not only from a clinical and diagnostic standpoint, but also has engaged in much laboratory study of the disease and its causation. This book is undoubtedly the most complete account of the disease, its clinical and laboratory findings, its history and pathology, and of attempts at its explanation, which has as yet appeared in English. This will be seen from the fact that the references include 827 titles. Cornell is very cautious and free from prejudice in his treatment of the many disputed questions which have arisen in regard to its symptomatology, pathology, and causation. He gives in full, a statement of the liver treatment of Minot and Murphy, with a suggested dietary, and short suggestions as to the methods of administering liver. The book is beautifully printed and almost free of typographical errors. It is a credit to both the author and the printer. It can be recommended to any physician who is anxious to gain a thorough knowledge of the disease.

V. E. HENDERSON

Principles of Sanitation. C. H. Kibbey, 354 pages, 34 illustrations. Price \$4.00. F. A. Davis Co., Philadelphia, 1927.

In the preface to this book, the author announces that it is intended primarily as a source of instruction to sanitary inspectors, who are now occupying an increasingly important place in the carrying on of public health activities throughout the civilized world, as trained officials working under the supervision usually of a full time medical man.

That he has succeeded in treating the subject in a

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sane, thorough and comprehensive manner, with due regard to all the latest developments of health department service will be realized by a perusal of its pages, which present the facts of modern sanitation in well chosen, plain language, intelligible alike to all engaged in the public health service. To lay readers this book should present much of interest and prove to have a high educative value.

The fallacy of many of the old time ideas regarding the real sources of disease is logically stated, and no extravagant claims are made for recent measures of prevention which are yet in the experimental stage. The authorities to whom the author acknowledges his indebtedness in the preparation of this manuscript are a guarantee of the soundness of the principles

enunciated.

If one might venture to express any criticism at all, it would be in reference to points of minor importance. For instance the author's method of vaccination for smallpox, in which he still recommends the cross scratch method, will not appeal to health officers, who have for years used the acupuncture or needling method as being just as efficacious and less liable to become infected. Further the suggestion of the extreme limit of 21 days as the incubation for scarlet fever instead of 8 days as usually given by the best authors seems to be an incorrect attitude to take in the light of our experience of this disease. In reference to revaccination, the author calls attention to the fact that Japan makes vaccination compulsory at five year intervals, Germany at twelve years, and asks who can say which is the better plan. When he further admits that these countries are usually free from epidemics it would appear he has answered the question in favour of Germany. Why vaccinate at 5 year intervals if the 12 year interval gives as good results? On the whole, the author is to be congratulated on his production.

T. H. WHITELAW congratulated on his production.

Physical Signs in Clinical Surgery. Hamilton Bailey, F.R.C.S. 217 pages, 261 illustrations. Price 21/net. John Wright and Sons, Bristol, 1927.

This is a unique volume and each particular clinical sign is discussed in sufficient detail. The volume commences with the elementary signs, such as one teaches to the new student in the Outdoor Department. Then the various signs in neck, mouth and face are enumerated and very well explained. The head is then discussed, particularly as regards intracranial injuries, localization and cerebral irritation.

Particularly instructive is the examination of the female breast, and one can spend some time in reading over this short comprehensive article. The limbs are discussed and particular stress is laid upon infection of

Hernia and lymphatics are concisely reviewed. Examination of the abdomen, as regards acute and chronic cases, has been gone into with sufficient detail to make one understand the various signs and symptoms met with in this graveyard of many medical men.

In all, in perusing this volume, one is simply enamoured with the wealth of clinical material and the acute observation of the writer.

The basis of all clinical examination is a profound knowledge of anatomy and physiology, and Mr. Bailey in drafting out this unique volume, has produced something which in the hands of the student should be a veritable gold mine. R. B. MALCOLM

Practice of Urology and Syphilology. Treatise on Genito-Urinary Diseases and Syphilis. Charles H. Chetwood, M.D., LL.D., F.A.C.S. Fourth edition, 879 pages, 314 illustrations. Price \$9.00. William Wood & Co., New York, 1927.

The author has taken the opportunity offered by the publication of the fourth edition of his text-book to make the additions necessary to maintain it up to date

with the latest developments of urological practice. By it, one can estimate in a measure the advance of urology in the interval between this edition and the preceding one. The application of diathermy and of radium is given due consideration. The author's impression of its results is somewhat disappointing. The importance of the careful pre-operative treatment of the candidate for prostatectomy is stressed, and the various methods of gradual bladder decompression are described. Contracture of the vesical neck is given a special consideration, which the author's work in this field renders valuable. The uses of local anæsthesia in urology, particularly its caudal application are detailed. The work is in two parts, the first and larger dealing with urology, while the second devotes 123 pages to syphilology, a feature gradually disappearing from urological text-books. This, however, makes the book the more useful to the student and general practitioner. The value of the book is much enhanced by its clear and well chosen illustrations.

F. S. PATCH

Radium in Gynæcology. John G. Clark, M.D., Former Professor of Gynæcology, University of Pennsylvania, and Charles C. Norris, M.D. 315 pages, 49 illustrations. Price \$9.00. J. B. Lippincott Co., 201 Unity Bldg., Montreal, 1927.

To the late Dr. John G. Clark of Philadelphia we owe a debt of gratitude for his enthusiastic perseverance in presenting to the profession in America what radium can accomplish in gynæcology. Especially is this true, in the treatment of cancer of the cervix uteri. To Dr. C. C. Norris, his brilliant confrère, the major part of

this present volume is probably due.

The book commences with a history of the discovery of radium, a romance worthy of the pen of Robert Louis Stevenson. The physics of radium is minutely explained by G. Failla of the Memorial Hospital, New York. The pathology and action of radium should be read by every gynæcologist. The specific action on the immature cancer cell is stressed. The value and technique of biopsy are discussed. Chapters iv-vii are devoted to cancer of the external genitals, vagina, cervix uteri and fundus uteri.

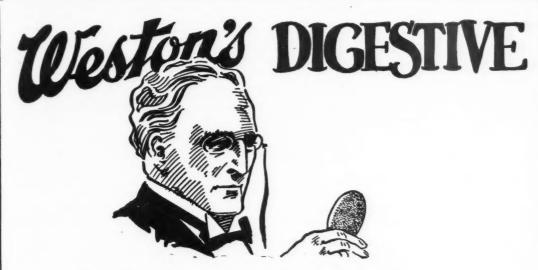
The authors, in cancer of the cervix uteri, Group 1 .i.e., early operative cases, favour cautery trachelectomy after separating the bladder from the uterus, followed immediately with an inverted T-shaped application of radium, the stem of the T being in the uterine cavity. This technique cured 83 per cent of Group 1. cases, while irradiation, alone, cured 28½ per cent, testimony to

the value of cautery trachelectomy.

The question of deep x-ray therapy following operation is touched upon without much enthusiasm. value of early diagnosis and treatment is manifest. divergent results of radium on the cancer cells are emphasized, and the necessity of pathologist, gynæcologist, radiologist and physicist collaborating, is apparent.

Radium is not recommended in cancer of the body of the uterus, unless contra-indications to operation exist, and if used, double the dosage is usually required. The necessity of waiting twenty-four hours for a pathologist's report on diagnostic curettings must be unusual where gynæcologist and pathologist are in close contact.

The next chapter is devoted to the treatment of myomata uteri. The remark is made that "irradiation should be the handmaiden to and not the competitor of Thirteen exceptions are listed where radium should not be used in myomata uteri. At the end of this chapter a case of myopathic hæmorrhage is reported. If "myopathic" is synonymous with chronic metritis and fibrosis uteri—a very frequent gynæcological ailment, the pathology of which one of our own Canadian gynæcologists some years ago so well described, it de-serves more than a few lines in a book on radium in gynæcology. The last two chapters are devoted to



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As a gynæcologist I would like more discussion centered on some of the distressing sequelæ of radium treatment, especially the contracted vagina, the distressing leucorrhœa, and the bladder and rectal irritation.

Every physician practising gynecology should be in J. J. MASON

possession of this book.

Surgery. Its Principles and Practice. Astley Paston Cooper Ashhurst, A.B., M.D., F.A.C.S. Third edition. 1179 pages, 1061 illustrations. Price \$10.00 Lea & Febiger, Philadelphia, 1927.

In the first edition of this book, in 1914, Dr. Ashhurst set himself the task of preparing a work that would give the student and practitioner of surgery a broad and deep foundation for the study of surgical science and art. The changes made in the text in the revision for this third edition approximate the book to this ambitious ideal. By avoiding superfluous detail, and thoroughly stressing the important points of the common and typical lesions, brevity and sufficiency are both retained.

The conventional ideas upon inflammation, and the rationale of its treatment, are set forth in complete form in the opening chapters. Lessons gleaned from war experience find a special place under the headings of gunshot wounds and amputations. The division of the book dealing with fractures is of special importance, since it contains many topics upon which the author is qualified to speak with authority. The names of surgeons who have been the originators of important advances or special procedures are inserted in the text, along with

the date of appearance of the particular contributions.

The subject matter is esentially clinical. Physiological and pathological details, and the technique of the rarer operations, are not emphasized. Actual cases are frequently cited from the author's practice and from the writings of Dr. Deaver and Prof. J. Ash-

We have noted no omissions of any important matter, and the lack of a bibliography is made up for by a list of the authors referred to in the text.

Scholarly accuracy in matters of grammar and English add to the value of the work. It can be recommended strongly to students in the senior years.

R. R. FITZGERALD

Synopsis of Physiology. A. Rendle Short, M.D., B.S., F.R.C.S., Surgeon to the Bristol Royal Infirmary, and C. I. Ham, M.B., B.Ch., M.R.C.S., L.R.C.P. 258 pages, illustrated. Price 10/6 net. John Wright & Sons, Bristol; Macmillan Co. of Canada, Toronto, 1927.

The senior author of this book who is Honorary Surgeon to the Bristol Royal Infirmary is already known by his "New Physiology in Surgical and General Practice." This synopsis is not intended to take the place of the usual text-books and laboratory manuals, but to serve as a summary for rapid revision, particularly for candidates for the F.R.C.S. who no doubt will find it of value. It is in fact a sort of quizz-compend, and without entering into a discussion of the merits of this type of book one may note that this example is in many respects a good specimen of its class. It covers the whole field of physiology including biochemistry and histology, a field so vast that one can scarcely expect any one individual to be equally familiar with the whole ground; it is not surprising therefore to find the treatment of the various subjects somewhat unequal. Speaking generally, one finds the sections which are of interest to the surgeon such as injuries of motor nerves considerably clearer than others whose practical bearing is more remote. Among these last the paragraphs on tissue respiration might be revised with advantage.

The book contains references to most of the more recent work, e.g., Harrington's papers on thyroxin, and the newer work of Meyerhof and Hill on muscular contraction. Its usefulness, however, is seriously impaired by a number of misstatements. For instance the endproduct of uric acid metabolism in animals is allantoin not urea (p. 124). Nor is it correct to say that (p. 50) "oxygen can be stored in cells till required." In view of these and similar remarks it is improbable that the book will be used as the authors suggest "on the desk of our brethren who lecture to classes in physiology as an aide-mémoire."

Appendicitis. Hubert Ashley Royster, A.B., Surgeon to Rex Hospital, Surgeon-in-Chief, St. Agnes Hospital, Raleigh, N.C. 370 pages, illustrated. D. Appleton & Co., New York, 1927.

This book is uniform with the series of "Surgical Monographs'' published on various subjects during the past few years. No apology is made for the publication of another book on appendicitis, and none is needed in this particular instance. The work is mainly an attempt to express the current opinion as represented by a correlation of most of the important papers on the subject during the past five years. The bibliography of the subject is very completely given and the work is of value for this one feature in itself. The general arrangement of the work renders it very easily accessible for reference. Chapters are given on history, anatomy, physiology, etiology, pathology, symptomatology, diagnosis, complications, appendicitis in children, prognosis and treatment. The summing-up of opinions on various controversial points, with an expression of the author's personal experience, contains safe and sensible conclusions. Recent work on prevention of wound infection is one of the very few subjects not covered. On the whole it may be stated that this book is of undoubted value to the surgeon and general practitioner. L. H. McKIM

Alfred Friedlander, M.D. 216 pages. Hypotension. Price \$2.50. Williams & Wilkins Co., Baltimore,

The scope of this little book is much more extensive than is indicated by the title. In fact but few pages are devoted to the special subject of essential The monograph, from the reviewer's hypotension. standpoint, might more properly be regarded as a treatise upon the subject of blood pressure in general, and the factors influencing it.

The discussion of normal blood pressure is well worth The condition is regarded as in need of a clearer definition and standardization than has yet been proposed. The remarks on the blood pressure in infants and children are instructive, and cover a feature of the subject not usually referred to in text-books, or, at most,

treated very briefly.

On pages 22-43 appears an excellent article on shock. Not only is shock discussed from the standpoint of hypotension but this much debated condition is well covered in regard to both cause and treatment.

Among the many factors influencing blood pressure the rôle of the adrenals is treated in a very interesting manner. The former theory as to the part played by these organs in the maintenance of blood pressure has been generally considered as satisfying and reasonable so that it is rather startling to find that the real explanation is yet to be discovered, and the finale of the matter has been by no means reached.

Some of the figures quoted respecting the pressure lowering powers of liver extract seem almost too good

to be true.

The section on the cardio-vascular influences is very clear and concise. The case for the hitherto almost disregarded capillary factor seems to be well established.

If a fault may be found with this monograph it is

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probably in the manner of arrangement and in the rather indefinite demarcation of sections. It would seem that the old fashioned and well established method of breaking up the text into definitely indicated chapters might be an aid to the reader. The publisher's share in the work is a credit to the bookmaker's art. It is well bound, and the clear sharp printing on the unglazed paper makes for easy reading.

Medico-Legal Injuries. Archibald McKendrick, F.R.C.S. 341 pages, illustrated. Price 18/- net. Edward Arnold & Co., London, 1927.

The author's purpose, as set forth in the preface, is accomplished "if an outline regarding accidental injuries treated in as simple and non-technical manner as possible could be written to bridge the gulf between the non-medical mind, and the highly technical terminology used in the ordinary medical text-books." The task is obviously a difficult one and may be thought by some to be well nigh impossible. One has the feeling after reading this book that if the lay reader were able to digest all the information given he would possess a knowledge with respect to accidental injuries rather greater than that of the average medical witness. However, in the opinion of the reviewer the non-medical mind will discover many passages hard to understand, and will find the glossary to be a broken reed for many technical words which occur here and there in the text are not defined.

In the first chapter anatomy is discussed, and in the second chapter the physics of injury. Following this introduction the succeeding chapters take up the consideration of bone and joint injuries, head injuries, back injuries and so forth. A chapter specially to be recommended is that on accident as a cause of hernia. If this were digested by the medical profession as a whole many embarrassing mistakes might be avoided. Industrial poisonings are not considered, although they can certainly be considered as medico-legal injuries.

The book is well printed and illustrated. It is, of course, written from the English viewpoint, but this does not appreciably impair its value on this side of the water. The author's treatment is clear, rational and accurate. This book can be recommended to industrial surgeons and to those of the laity who can understand it.

FRANK G. PEDLEY

The Anatomy of the Nervous System. Stephen Walter Ransom, M.D., Ph.D. Third edition. 425 pages, 284 illustrations. Philadelphia and London: W. B. Saunders Co., Canada: McAinsh & Co., Toronto, 1927.

This, the third, edition of a very useful work is brought up to date by the incorporation and correlation of the most recent findings in the above and cognate fields. It tends in the main to confirm, but occasionally to correct, what has already been surmised, and offers some new surmises for further consideration. Much of the research work here involved has been done by the author himself. The book approaches the subject from the ontological standpoint of embryology, human and comparative, and thus through establishing the anatomical significance of various structures, hitherto obscure, helps to clarify some functional aspects as well. While the treatment of the subject in the main is of necessity along routine lines, there are occasional innovations, a few of which, though sanctioned by authority, are not altogether happy, e.g., the functional classification of the cerebro-spinal nerves, and some of the newer termin-ology, which are rather confusing. In the discussion of the sympathetic nervous system, there is some addi-tion of new and interesting detail which may offer a step towards the elucidation of that complex and not too well understood subject. Following the main matter

there is a section entitled, "A laboratory outline of neuro-anatomy" which is distinctly thought-stimulating. This, combined with the customary sub-section of clinico-pathological illustrative cases, offers exercises which provide very good review material.

This volume is well printed and on good paper. It

This volume is well printed and on good paper. It is clearly written, abundantly documented, sufficiently indexed, and profusely illustrated, though some of the original illustrations are too full of detail to make for clarity. Though hardly a book for the elementary student of the subject, for the instructor or the advanced student it is a very useful work.

NORMAN VINER

The Surgical Clinics of North America. Vol. 7, No. 1. 235 pages, illustrated. W. B. Saunders Co., Philadelphia and London. McAinsh & Co., Toronto, February, 1927.

The first abstract in this number is by W. Sampson Handley on "The Origin of Bone-Deposit in Breast Cancer." This is a short discussion; but is done with his usual thoroughness, and is greatly to be appreciated by all who read it.

Discussion of cancer of the breast with extensive metastases by Dr. John Berton Carnett is very comprehensive and almost every conceivable metastasis is discussed. The illustrations are excellent and the whole article is well worth reading.

article is well worth reading.

Then cancer of the prostate with bone-metastasis is discussed by the same author, showing excellent views of the long bones and the spine, in which are seen metastastic growths.

In conjunction with N. W. Winkleman, the same author takes up the question of metastastic tumours of the nervous system. Numerous pathological material is reviewed and four concrete cases are discussed.

Tumours of the spleen with a report of twentyeight cases from the clinic of E. B. Krumbhaar and J. B. Scott are reviewed, each being discussed in a concise but fully comprehensive manner.

The other contributions to this volume on cancer, include Endotheliomata—Multiple Primary Carcinomata, Basal-Cell Carcinoma of the Face, Epidermoid Carcinoma of the Lip from the Radiological Department University and Philadelphia General Hospitals. Results obtained are very encouraging, particularly with radium.

Malignancy of the mouth, from the same department of these hospitals, and treatment in a similar way are also very encouraging.

are also very encouraging.

X-ray therapy in respiratory disorders—electrothermic methods in malignant diseases are shown in great detail as regard technique.

This volume contains a great deal of valuable information compiled by well known authors, and leaves one with the impression that although there is still a great deal of progress being made in treatment of malignant growths, the field is yet almost unexplored.

R. B. Malcolm

Diseases of the Skin. Robert W. MacKenna, M.A., M.D., B.Ch., Lecturer on Dermatology, University of Liverpool. Second edition. 452 pages, 143 illustrations. Price \$7.50. Williams & Wilkins Co., Baltimore, 1927.

This treatise of four hundred pages admirably meets the purpose of the author. The subject matter is well arranged, presented clearly, tersely and forcibly. The literary form is excellent. There are 166 illustrations covering the text. These are well chosen and with few exceptions clear and distinct, according valuable aid to a definite understanding of the different subjects under discussion. The book is a distinct contribution to medical literature.

HUGH W. MACKAY